COMMUNICATIONS WORLD

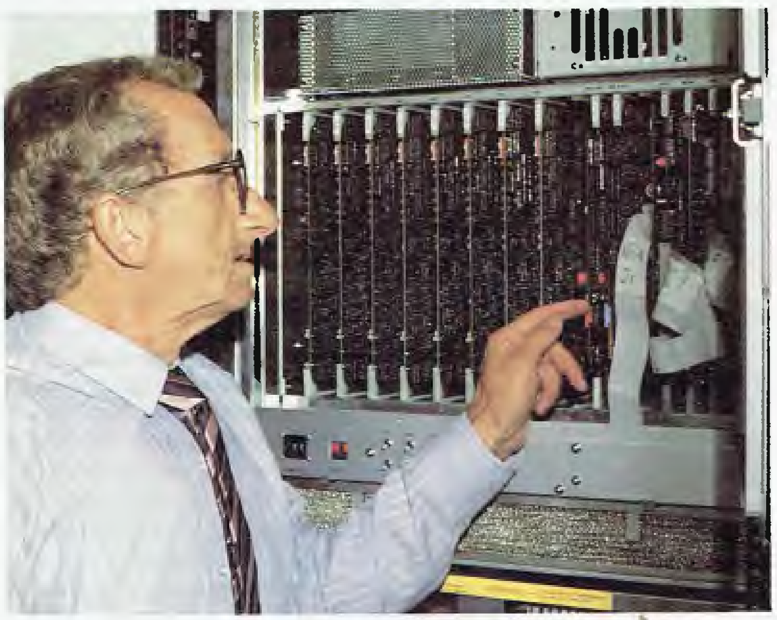
REGISTERED BY AUSTRALIA POST — PUBLICATION No NBP 7891

INCORPORATING COMPUTERWORLD ON COMMUNICATIONS

March, 1987 Covering data, voice and image communications ISSN: 0817-1904

ICI experiments with voice

Worldwide links the catalyst as chemical giant tests Vox



John Sands . . . US success a key consideration.

By Peter Scott

MELBOURNE — ICI Australia Ltd has become the first Australian user of a voice mail system that was not granted Telecom approval until December.

John Sands, ICI's telecommunications manager, said the Vox system was installed in mid-February and was expected to be made available to 100 pilot users at the end of the month. The company expects at least 700 employees to make use of the system when it is fully commissioned.

"The pilot project will continue through March and April, and the system will be used throughout the company from then on," Sands said. "We are being cautious and want to eradicate any difficulties we may find before making the system generally available."

The 16-line Voice Message Exchange system designed by VMX Inc was supplied by Honeywell Ltd. In addition to its ability to store, send and receive messages the digital system offers auto reply, redirect, broadcast and call answering facilities.

A number of VMX systems can also be networked, a facility that was of great interest to ICI.

"ICI already uses the VMX system in the US where there are 4000 users generating 200,000 messages a month," Sands noted.

"The US system has been in place for about two years and its success was a major reason for our decision to consider voice messaging.

"We expect to link our box with systems in the UK within two or three months — the three will operate as a network," Sands said.

ICI has targeted a number of its Australian staff as potential users for its VMX, including marketing, engineering and production staff.

"The people we have in mind are those who are frequently away from the office. We believe we can gain a competitive edge through use of the system in our marketing divisions," Sands said.

"ICI is very sensitive to meeting customer needs and sees voice messaging as a way of doing that."

However, the company has found it very difficult to predict how much use the system will get. "It is a completely new tool. There is no way to estimate the load we could expect," Sands noted.

"I think eventually we could go as high as 1500 users, in which case we may have to upgrade the system," he said.

For its current 16-line system, which is expected to be able to store 28 hours of messages on its two disk drives, ICI has installed a single exchange interfaced to its Ericsson MD110 PABX. It is connected to the company's voice network as well as to Inwats lines for users in remote areas.

"We are using existing staff to control the pilot project, and we believe that once the system is up and going and the number of users is reasonably stable, the workload should be relatively light," Sands explained.

In the meantime, the company is still discovering the system's capabilities. "It has a lot of bells and whistles that are proving to be most useful," Sands noted.

A spokesman for the Vox supplier, Honeywell, said that facilities to be added to the system in the near future include a text-to-voice translation facility and integration with data systems.

Brand-new company wins $3.4m rail integration job

SYDNEY — The State Rail Authority of NSW has embarked on a major project to integrate its three main computer systems by placing a $A3.4 million contract with Network Automation Pty Ltd for the supply of 84 Ultranode packet-switching network nodes.

The order is a coup for Network Automation, since it is the first order for the company formed only last month as a joint venture of Techway and Csironet (*Communications World*, Feb, page 16).

Pat Johnson, acting chief executive of State Rail, said the authority would develop a totally integrated communications network providing high speed data links between its three main computer systems — which are all different — and for the many data management systems it used.

The Ultranodes, designed and manufactured in Australia, have been chosen for their ability to link different types of computers and their individual networks even when all use different protocols.

The authority's network will take in operations throughout NSW and will provide a future interface with the Queensland and Victorian rail system data networks.

At first it will complement other communications facilities used by the authority, but eventually it will replace them. It is expected to support 3000 terminals within five years.

Johnson said the Ultranodes will be phased into 40 sites under the control of a network management centre operated by the Signals and Communications Branch. Implementation will start in April and take about eight months.

(Continued page 6)

Pat Johnson . . . "a totally integrated network."

Aussat calls bold new tune

By Peter Scott

SYDNEY — Aussat is to use its new-found muscle as a proven satellite operator to force suppliers of its second generation satellite systems to accept terms that have never been imposed on them before.

In its request for tender for two new spacecraft, the Australian company will insist that it will enter a single contract with the prime contractor who will be responsible for orbiting satellites.

It is the first time an operator has demanded that its supplier should undertake to launch a spacecraft, and is intended to remove much of the risk and cost of launch failure from Aussat.

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The strategy is quite different from the company's previous contracts. Dick Johnson, Aussat's general manager, noted that normal practice was to "buy some satellites, then buy the launch services, and then go out and buy insurance". Aussat is now demanding that all those tasks be undertaken by the prime contractor.

"This strategy, which we recognise is new to the aerospace industry, is in many respects a reflection of the extraordinary circumstances of launch and spacecraft failures over the past few years," explained Graham Gosewinckel, managing director and chief executive of Aussat.

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The industry is ready, the markets are set
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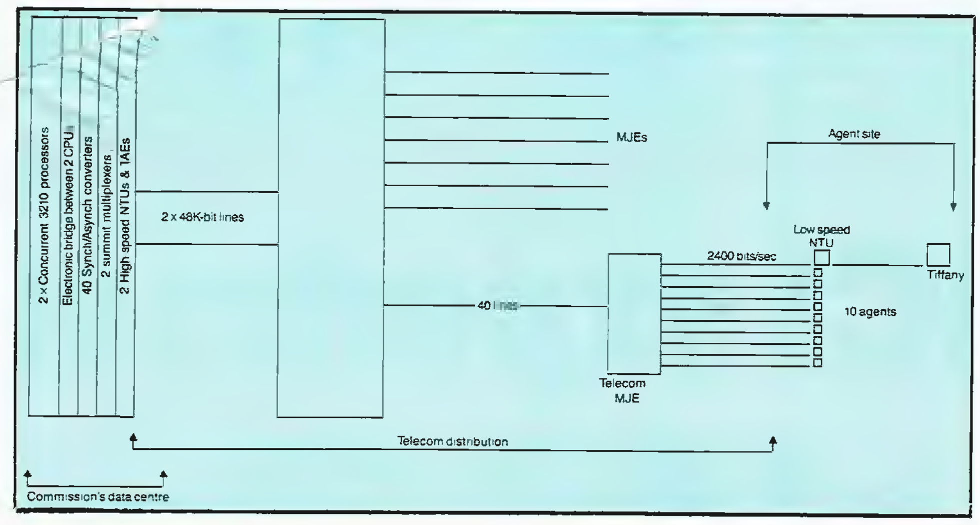
Lotto opening up the West

By Peter Scott

PERTH — A further 22 terminals in a network of about 320 terminals covering most of the vast State of Western Australia are to be brought online this month as the Lotteries Commission implements the second phase of its online Lotto gaming system.

In the first phase of the network, which went live in November, 278 terminals were linked in the south-west of the State, including Perth and Kalgoorlie. The second phase, to be implemented this month, will extend to Geraldton, Carnarvon, Karratha and as far north as Broome. It will include remote sites like Tom Price.

Terry Hendricks, data centre manager for the commission, said the online system was designed to allow customers to fill in a Lotto form and have the wager entered into the commission's central system from an optical mark reader that forms part of the agent's terminal. The central system logs the entry and responds with a serial number which is printed on to a ticket along with a barcode for entry identification and the customer's selected numbers.



This supersedes a cumbersome system under which forms were physically delivered to the commission and recorded on microfilm. It has the added advantage for customers that winning tickets may be redeemed at any agency, where the barcode is read to allow the central system to check the ticket's validity.

The online system allows agents to trade almost to draw deadlines instead of closing off up to a day earlier.

Hendricks said that once the decision to streamline Lotto was made the commission examined the offerings of a number of gaming system suppliers. US group GTech was selected as the major contractor to supply a system based on a Concurrent Computer processor and Tiffany terminals.

Hendricks said the dual processor Concurrent 3210 system was specially modified to handle communications management and data storage. "It was essentially stripped down and modified," Hendricks said. "Instead of 10 or 20 ports, each processor has 40."

Each of the 3210 processors has 4M-bytes of main memory and two disk drives with 300M-byte capacity. The processors are configured to give total redundancy.

"The primary system records all transactions from the terminals in agents' offices, and all transactions are duplicated on the second disk drive on the primary system as well as being logged to tape. The second system duplicates all functions of the primary, and should any major function fail the second processor picks up immediately," Hendricks explained.

Expandable

The processors are linked by two 48K-bit lines to Telecom's DDN synchronous service. The two lines are split into 20 sub-lines, each supporting 10 drops (agents). The system has a total capacity of 400 terminals, but may be expanded according to demand.

Some problems were encountered initially because DDN does not extend to all regions of the State and so did not cover all agents. The commission overcame this headache by using a combination of DDN and Datel links until DDN could be extended to the affected agents.

"This brought some problems with timing," Hendricks noted, "so we slowed polling across the entire network." The overall response time from coupon entry at the agent's terminal to response with the printed ticket from the central system is about six seconds.

Conversion from synchronous to asynchronous communications is carried out by a bank of protocol converters in the commission's computer room. Multiplexers (from Summit) and converters were supplied by Perth company Data Link. The central processor, terminals, switching gear and peripherals were supplied by GTech.

Hendricks said installation of the network was done in close co-operation with Telecom and an electrical contractor.

The system went live on November 4 — one day ahead of schedule — in the Perth metropolitan area. Its first live task was a $A10 million jackpot.

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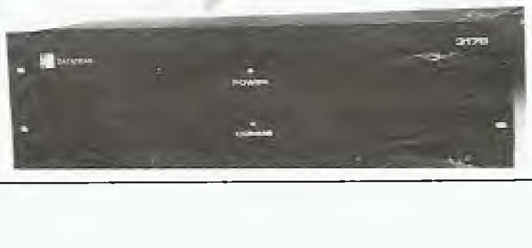

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Design award for first inhouse job

Barry Jones, Federal Minister for Science (right), presents the Australian Design Award for Acacia/OPM to Dr Richard Presser of DDP.

SOUTH MELBOURNE — Micro-mainframe specialist Distributed Data Processing has won an Australian Design Award for the first software product it has designed inhouse.

The package, Acacia/OPM, is a performance monitoring system for IBM networks. It is said to differ from other available systems by allowing users of large IBM systems to measure response time delivered to the enduser at the terminal rather than at the mainframe.

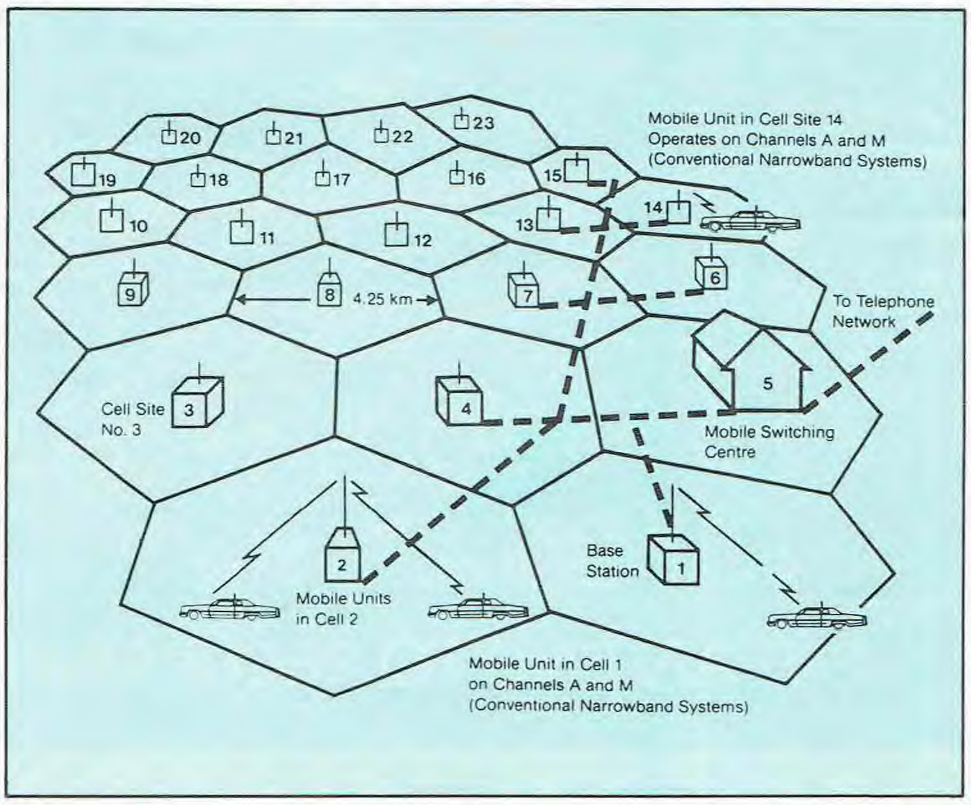
Dr Richard Presser, DDP's marketing manager, said the product measures response time by transaction type while being used as a normal terminal, giving a true view of performance. "This is achieved without impacting the enduser's response time," Presser claimed.

It also enabled a user dialogue with the host computer to be captured and replayed at any given frequency, allowing stand-alone monitoring, regression testing and stress testing to be performed, he added.

The Australian Design Council's judging panel highlighted the package's performance, functionality, ergonomics and ease of use. DDP is marketing Acacia/OPM throughout Australia and is in the final stages of establishing a distributor network in the US and Europe.

Presser said the US market was more ready for the product than the Australian market, and its potential was enormous. "Some 25 per cent of corporate personal computers are currently linked to mainframes," he said. "DDP believes that percentage will grow dramatically to about 50 per cent in the next two years."

Mobile phones upgrade



SYDNEY — Telecom has introduced its Mobilenet cellular mobile telephone system in Sydney, claiming it will increase capacity for mobile phones tenfold. The system is to be introduced to other capital cities and is expected to be in some 30 provincial centres as well by the early 1990s.

Expansion of the system will start with Melbourne, which is expected to be operating by mid-1987, followed by Brisbane, Adelaide and Hobart, all of which are expected to have the service by the end of the year. The MTS system will continue to operate for at least four years.

The Sydney operation will use 14 radio base stations and is said to be capable of supporting at least 50,000 mobile units, compared with about 5000 unit capacity under the existing MTS system. Another five Sydney sites are under consideration if demand increases.

A Telecom spokesman said the system should have sufficient capacity to satisfy demand into the early 1990s. "By this time the next step — digital cellular mobile telephones — should be developed to provide a further increase in network capacity."

Telecom recently awarded a $A2 million module phone research contract to Philips Communications Systems in Melbourne. The digital systems are expected initially to overlay the Mobilenet technology, which uses analogue signals between base stations and mobile units, so that both types of phone will operate in tandem, the spokesman explained.

The Mobilenet system will allow the use of vehicle mounted phones, transportable units, and handheld models.

Telecom will market its own range under the Explorer label, but other suppliers will be able to market in direct competition — provided they gain endorsement and authorisation, the spokesman said.

Telecom's car mounted unit (the Traveller) will be supplied by Philips, the transportable Attache by NEC and the Walkabout handheld model by Mitsubishi. Radio base stations and switching equipment will be supplied by LM Ericsson.

Features of the new system include automatic roaming (the ability to make and receive calls within any of the areas of coverage regardless of vehicle location) and call diversion. It operates at a radio frequency of 800MHz and offers 600 channels with frequency re-use in the same city.

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Sticky problem solved

NORTH SYDNEY — A relatively straightforward installation of protocol converters has overcome an annoying and costly problem for wholesale tour specialist Jetabout Tours Pty Ltd. Benefits from the installation have been felt immediately, and the equipment is expected to be cost justified within two years, according to the company's information services manager, Roger Delaney.

Delaney explained that the problem occurred because most of the Qantas subsidiary's 200 users needed both synchronous and asynchronous terminals, a costly duplication that cluttered users' desks.

The need for the two terminals came about because Jetabout's inhouse processing is done on three Pyramid superminicomputers using Pyramid's implementation of the Unix operating system, but the company's agents also need to access several systems running on Qantas's Amdahl mainframes.

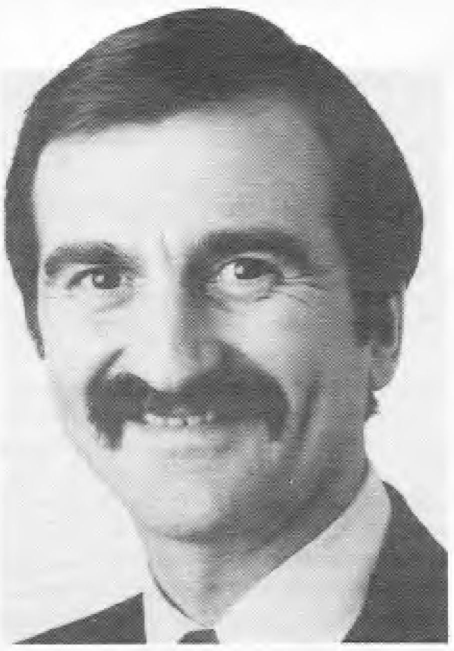
Delaney said Jetabout's inhouse users are linked via a Sytek System 20 local area network to the Pyramids, which run Jetabout's tour and accommodation systems. The Pyramid machines, one of which was installed early this year, are themselves linked by Ethernet and are accessed via asynchronous terminals.

The Sytek Lan has a gateway via 96 lines to the Qantam and Ipars accommodation and reservation systems, as well as access to general DP running on Qantas-mainframes.

The company overcame its problem by installing eight of Systems Technology's 3703 protocol converters with 12 ports each to allow users access via asynchronous terminals to the lines to the Qantam and Ipars systems, Delaney said. Jetabout now runs about 200 asynchronous terminals, but has retained about 50 PTS 100 terminals for operators whose only need is to access Qantam or Ipars.

Jetabout is also planning to make the move from the Sytek System 20 Lan to the recently released System 2000 in the near future. It expects to have an additional 64 ports on the network by the end of March. The Lan also supports a Wicat 220 which is used for computer-based training, and will in the near future also support a network of personal computers.

Remote users at branch offices in Auckland and Perth have access to the Lan, and will be joined in the near future by users from offices in Fiji and Singapore. Other users in the Pacific region will require access in the near future.



■ **Roger Delaney . . . used protocol converters.**

Nissan widens dealer links

MELBOURNE — At a cost of about $A1.3 million, Nissan Motor Company (Australia) has updated its Dealer Electronic Communication System videotex service to allow just under half the dealers in Australia to be connected at any time.

Michael Wearne, who is in charge of the videotex system, which operates via Austpac, said the greatest benefit accrued to Nissan's rural dealers. "Previously, they had to pay normal STD rates to connect to one of the system's metropolitan lines — 24 each in Melbourne and Sydney, and eight in Adelaide," he noted.

The number of physical connections has almost been doubled in the latest project, which involved the installation of three X.25 Pads (packet assemblers/disassemblers) from JN Almgren.

"While the metropolitan connections remain intact, continuing to be used for intermetropolitan communication, the X.25 Pads have enabled country dealers to use 48 extra connections nationwide and at the cost of a local telephone call," Wearne said.

"The speed at which dealers receive information has been greatly improved and the quality of information available over a wide range of areas has been greatly upgraded, allowing for better forward planning," Wearne claimed.

Correction

A NEW product announcement in our November 1986 edition incorrectly stated that the Tosbox telex and data interface from Offcom Pty Ltd had received Telecom Mode 1 approval for direct connection to the Telex network (*Communications World*, Nov,1986, p26).

Further reference was made to Mode 1 connection in response to a reader's letter in our next edition (Dec, 1986, p6).

While Offcom announced at the time of the Tosbox's release that it had applied for a Telecom Mode 1 permit at no time did the company claim to have received Telecom Mode 1 approval. Tosbox is covered by an existing Telecom Mode 36 permit.

***Communications World* apologises for any confusion that may have been caused by errors in the article and comments it published about the Tosbox and Offcom's director Norman Young.**

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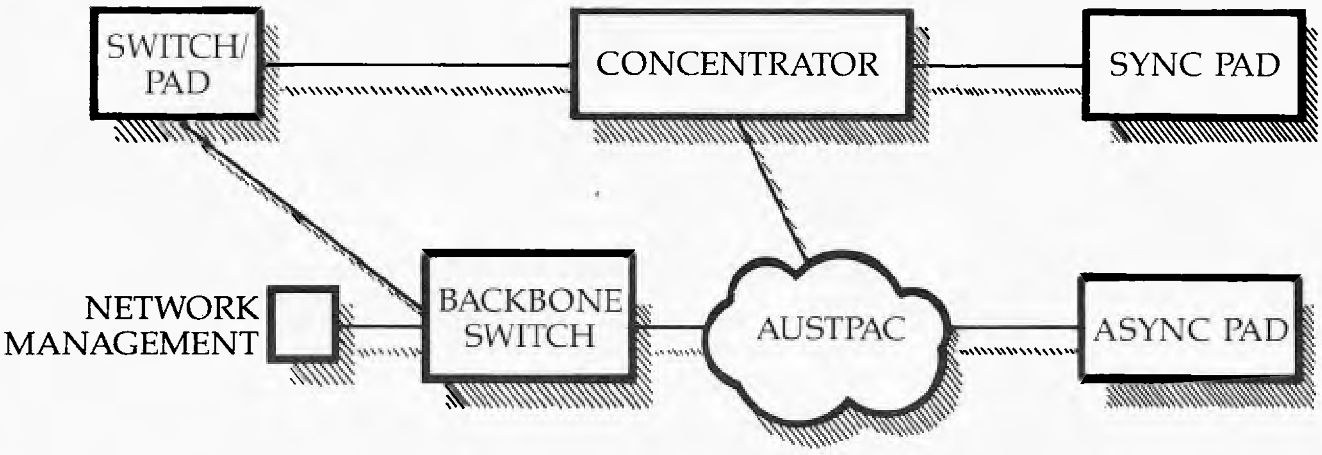

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New Appleshare file server transforms Macintosh Plus

By Laurie Flynn and Rory O'Connor
CW International News Service

SAN FRANCISCO — Apple Computer has formally unveiled its Appleshare file server, which turns a Macintosh Plus computer and its attached hard disk drives into a dedicated file server on an Appletalk network.

At the same time, Apple announced its plug-in card for IBM PCs and compatibles that connects them to the Appletalk network.

Neither of the products has been released in Australia.

The Appletalk PC Card permits MS-Dos-based machines to use Apple's laserwriter, and comes with software that converts several MS-Dos text file formats into Postscript files that can be printed by the device.

Apple's card, due out in the US in late March, is similar to a less expensive card from Tangent Technologies, and, until new software is developed for the cards, MS-Dos users will not be able to use the Appleshare file server. Both Apple and independent developers said they would develop such software using Apple's AFP protocols.

The Macplus — transformed.

"We have set some standards again for third-party developers to have an interface for their (MS-Dos) programs to connect with our machines," said Apple chairman John Sculley. "We want to have third-party companies do most of the products."

Sculley, who recently presided over the formal unveiling of both the card and the file server — the latter two years after Apple first announced its plans for an Appletalk file server — emphasised the file server's ease of use for individuals. But he also said buyers should go in with their eyes wide open as to the product's underlying complexity, and buyers would have to train network administrators to manage work groups based on the server.

"If you're not ready to finance a network administrator to support the work group, then you haven't made the decision to go with desktop communications," Sculley said.

While the dedicated Macintosh may not be used as a workstation to run applications, Appleshare can operate an additional network service in the foreground, such as electronic mail or printer spooling, according to Peter Friedman, Apple's desktop communications marketing manager, who strongly recommends the use of SCSI-compatible disk drives.

Sculley said that Appleshare was already on the shelves of selected dealers who have received special network training from Apple. Those dealers in turn will offer buyers of Appleshare a two-day, network administrators training course.

Apple Computers Australia Pty Ltd, 37 Waterloo Rd, North Ryde, NSW 2113. Tel: (02) 888 5888.

Neil McKellar ... "Strong North American market."

Export grant for Austrade

THORNBURY, Victoria — Communication electronics manufacturer Professional Australian Systems has been awarded $A100,000 by Austrade to help establish overseas sales offices in North America and Europe.

The grant is one of 10 made under Austrade's high technology exporter's scheme to companies able to demonstrate that they had reached a point in commercial and product development where exports were viable.

The managing director of Pas, Neil McKellar, said funds were initially being committed to the employment of full-time Pas sales staff in the UK and the balance would help in the opening of a North Amercian office.

"North America offers strong market opportunities for our range of SDLC/HDLC to X.25 equipment, while we have strong interest in the UK in our digital link analysers and our electrical conversion interfaces," he added.

Pas exhibited at the Hanover, CeBIT Fair last March. "We had already been making export sales through the affiliates of some of the larger communication companies with Australian offices, but it was made clear to us that we could not expand our export sales without strong overseas offices," McKellar said.

"The Austrade grant will enable us to to bring forward our plans to to this."

Products galore at conference

SAN FRANCISCO — Desktop publishing was the buzzword of the past year. Now Apple Computer has a new strategy — desktop communications. That is Apple's term for a plan to connect its machines with each other and with other systems and to share data through a simple, single-user interface.

Apple put its strategy centre stage at the Seybold Conference on Desktop Communications here, an event scheduled around a series of Apple product announcements in February.

Apple's new products included a file server, a half-size card that lets IBM PCs connect to an Appletalk network, and a file transfer utility for micro-to-mainframe communications.

But while Apple drew much of the attention at the conference, Seybold was also the forum for a host of other announcements from companies that support Apple's new products and accompanying standards such as AFP, the Appletalk Filing Protocol.

Among the vendors supporting Apple's Appleshare file server was Microsoft, which said its new release of Word 3.0 for the Macintosh would be compatible with the product.

Microsoft chairman Bill Gates said the product would allow Appleshare users to share files as well as custom dictionaries and style sheets. Microsoft plans to add Appleshare support to other Macintosh applications, including Excel, he said.

Alisa Systems said it plans to support AFP in the next release of Alisatalk, which transfers files between Macs and DEC Vax computers. It also will release a remote log-in facility for Alisatalk in the second quarter.

Tangent Technologies, which itself makes a plug-in Appletalk card for IBM PCs and compatibles, said it will develop PC Macbridge/AFP, a program to give owners of its card and the Appletalk PC card access to files on an Appleshare server. The program will be available in March for $US350.

Several makers of Macintosh hard disk drives, including AST Research, General Computer, Supermac Technology, and Reach Technologies all announced support for AFP and Appleshare.

Supermac and Reach also introduced new products at the conference. Supermac's Sentinel is a data security program that records in a macro a lockout sequence, saving the user from having to lock each open file.

Reach Technologies announced the Nucleus series of file servers, which features 20 and 40M-bytes of memory and an external Small Computer System Interface port.

Aussat calls bold new tune

(Continued from page 1)

Aussat's unique contract requirements, spelt out at a briefing in Sydney last month bemused the international aerospace industry.

"It is the first contact of this type in the world, and it will be quite a challenge for the prime contractor," said Mike Houterman, manager of the Advanced Programs and Technical Operations Lab for Hughes Communications International.

"However, I am sure we will see more contracts like it. There is now a tendency for operators around the world to consider risk divestment of this type," he added.

Houterman said he was not taken by surprise by the demands contained in Aussat's draft request for tender. Hughes, the supplier of Aussat's first generation spacecraft, and other potential prime contractors had been discussing the second generation spacecraft with Aussat over the past 12 months.

There are distinct advantages for Aussat in demanding that the contractor should design, construct and launch each satellite and carry the risk of getting the spacecraft into its final orbit.

"This strategy enables Aussat to identify overall costs as part and parcel of the tendering phase with satellite, launch and risk mangement costs all being part of the competitive process," Gosewinckel said.

Aussat is well aware of the difficulties the concept would impose on some tenderers and has worked several options into the RFT to allow some sharing of the risk.

Aussat's draft request for tender seeks bids for the manufacture initially of two satellites to replace Aussat 1 and Aussat 2, which are now in orbit but which are expected to reach the end of their operational lives in March 1993 and January 1994 respectively.

"We expect that tenderers will propose to launch the first satellite in the new series around 1991, thereby providing a one to two-year overlap between the first and second generation," Gosewinckel said.

Gosewinckel claimed that the strategy of providing overlap between successive satellites offered Aussat advantages by reducing the risk of service discontinuity.

CANBERRA — The Australian Space Board, set up late last year by the Federal government, has decided to offer monetary incentives to help indigenous companies wishing to get involved with projects related to the Aussat second generation satellite program.

Proposals should be addressed to The Executive Member, Australian Space Board, Department of Industry, Technology and Commerce, Edmund Barton Building, Barton, ACT 2600.

State Rail takes Ultranode

(Continued from page 1)

The Ultranodes will integrate the timetables and electrical branch system on Hewlett-Packard equipment; the rolling stock management system on Tandems: and reservations, personnel, locomotive maintenance and administrative systems on Sperry hardware.

The HP and Tandem networks use asynchronous protocols and now support 65 and 75 terminals respectively. They will be linked to the network by the more efficient X.25 protocol when the Ultranodes are installed.

The Sperry network uses synchronous protocols and has 500 terminals connected. UTS protocol is supported by the Ultranodes.

Johnson claimed that from its first day of full operation the integrated network will have the capability to support up to 1200 terminals and allow the introduction of new services such as videotex and the extension of reservation services to independent travel agents.

ISO happy with draft

Lal Fernando . . . draft presented.

NORTH SYDNEY — An Australian standard on the vital key management aspect of electronic funds transfer at point of sale (EFT/POS) is set to be adopted by the International Standards Organisation (ISO).

Last October the Australian draft was presented by Lal Fernando of the Standards Association of Australia (SAA) to a committee discussing PIN management and security.

The committee decided that the ISO key management standard should consist of principles only, and that implementations which comply with those principles should be described in detail and included in the standard as a series of annexes.

It also decided the Australian and UK committee members should collaborate to ensure that the Australian scheme is acceptable in both countries so that an agreed joint scheme can be included as the first annex.

At the committee's next meeting, which is to be held in Australia this month, the joint scheme will be submitted, and Fernando said he expected it to be accepted as an annex soon after the meeting.

Other Australians on the committee are Chris Reilly of Austnet and Ken Lofthouse of the National Australia Bank.

Mixed feelings about acceptance of LU6.2

By Bob Hamel,
CW International News Service

FRAMINGHAM, Mass — The International Standards Organisation's (ISO) recent decision to adopt subsets of IBM's network architecture into a draft standard (*Communications World*, Feb, p16), has left users with mixed feelings. Some users believe the move may weaken the overall effort to draft a non-proprietary architecture for interconnectivity, while others said it may speed the standards-making process.

Herbert Bernstein, a senior research scientist at the Courant Institute of Mathematics and Science at New York University, considered ISO's adoption of LU6.2 a reasonable step, but cautioned against having a multiplicity of specifications in the same area.

He was concerned that the OSI model will eventually "end up as a collection of alternative methods".

"That does not constitute a standard," he said. "We seem to be headed in the unfortunate direction of having lots of supposed standard implementations which are incompatible."

He likened the process to "having a standard for light bulbs that says some can be right-hand screw and some can be left-hand screw".

Kent England, manager of network and system engineering at Boston University, said he followed ISO closely and was eagerly awaiting "common, high-level protocols that will allow us to link our systems together in the future". He said he believed practical implementation of the OSI model was at least three years away.

England cautioned against sacrificing functionality for standards. "If I can't duplicate the functionality of advanced research project agency protocols with OSI, I won't be inclined to adopt them." ARPA protocols were originally designed for the US Department of Defence and are still widely used by many institutions. "I wouldn't give up functionality just to conform to standards," England said.

Ed Hodgson, manager of computing and communications for Westinghouse Electric Corp, said he had adopted a wait-and-see attitude towards ISO's decision. "Everyone talks a lot about LU6.2, but no one does much about it," he said. "LU6.2 may give us the ability to do peer-to-peer data transfer and that will be an advantage. But don't expect to see the full benefits of the protocol for at least a couple of years."

Corporations had large investments in equipment and applications that were not LU6.2 compatible, Hodgson said. "It's going to be a while before we opt to replace what we have."

Bill Hartman, a senior consultant with Arthur D Little Inc, considered the announcement as potentially "making IBM's life in international markets a bit easier". Hartman supported the development, indicating that, for most users, "the closer OSI and SNA are, the better".

Telecom backs local R&D

MELBOURNE — Telecom Australia has established a $A5 million annual fund for the research and development of Australian telecommunications products.

Managing director Mel Ward said Telecom and the business community should look for innovative and Australian ways to research and introduce telecommunications products. He claimed that as a result of Telecom policies, about 90 per cent of telecommunications materials and equipment bought by Telecom was obtained from Australian manufacturers.

"In the past, limited industry research and development representing around 3 per cent total telecommunications sales has been mainly related to the adaptation of equipment designed overseas, to make it more suitable for Australian requirements," he said.

"This new fund complements our current approach to Australian-based research and development. We do support industry through research and development contracts for specific Telecom initiated projects, but we are now prepared to make additional financial resources available to entrepreneurs who wish to develop ideas and concepts for products which can be used on the Australian telecommunications network and the world market."

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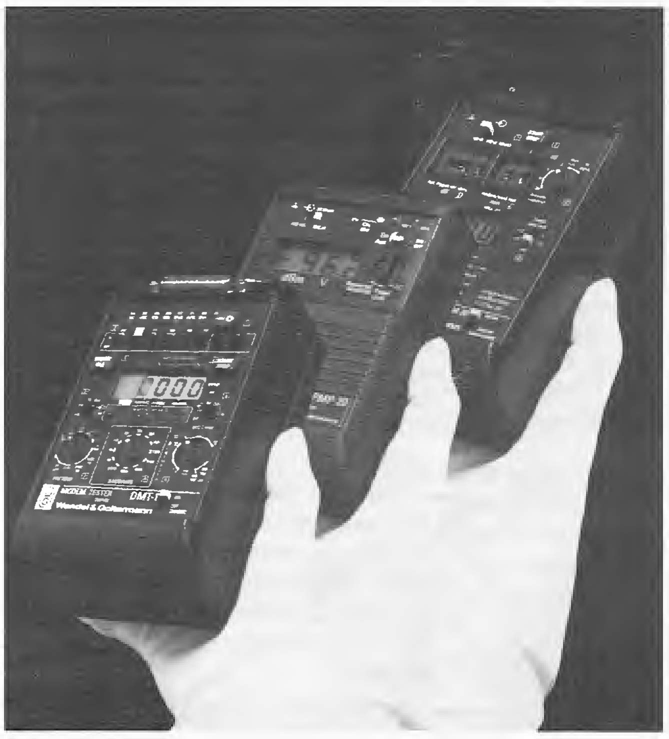

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EDITORIAL

Buckley's chance of an industry

AUSSAT is revelling in its status as a satellite operator with sufficient proven ability now to be able to inflict its will on the aerospace industries (see page 1). It has used its newfound position of strength to force contenders for supply of Australia's second generation of satellites to abide by unique terms.

The entire draft request for tender that Aussat outlined to the world's aerospace community was a bold document boldly presented by a very young company. It will succeed only because Aussat has clearly demonstrated an expertise that places it in world class.

It is disconcerting that other groups are trying to ride along on Aussat's wave, that Aussat's success is seen as the means to create an Australian industry from the ground up.

The international guests who gathered in Sydney to learn about Aussat's plans for its B1 and B2 satellites listened in silence to the Australian content specifications.

The objectives spelt out by Aussat were laudable: to achieve a high level of Australian industry participation in the Aussat B program; to develop industry capabilities in space-related areas; and to focus on capabilities with prospects for competitive application in future Aussat and overseas space programs. These are all worthy goals.

But the actual requirements are more difficult to meet. The Department of Industry, Technology and Commerce, working through Aussat, is requiring an Australian value-added content of not less than 4 per cent in addition to the normal offsets requirements of 30 per cent. Ditac has also decided that it requires at least 50 per cent of that offsets commitment to be directed to space technology, with emphasis then being given to communications industry development.

That is good news indeed for the Australian communications industry.

But it will cause headaches for aerospace companies wishing to tender for B1 and B2.

There is negligible space-oriented industry within Australia that could be called on to provide that 4 per cent Australian content, or with which a contract winner could work on offsets fulfilment.

And as Australian delegates at that Aussat briefing made clear, the costs of starting up a space technology venture here to exploit the requirements are prohibitive, and have Buckley's chance of ever turning a profit.

The government must take a more realistic view of the industry assistance demands it places on overseas suppliers. By all means enforce local content rules and offsets regulations, but for the good of Australian industry, let those rules and regulations apply realistically.

This attempt to create an industry out of nothing but the expertise of Aussat will serve only to dilute the company's hard-earned success.

Untangling the Ethernet web

CONSIDER the wonders of Ethernet. It is a local-area network to which we can connect all manner of equipment, and it is so simple. Just run the Ethernet cable around the building ("over the ceiling and through the floor, to my Microvax we go . . . "), plug in the connectors and up it comes. It couldn't be easier. Or could it?

The cost-savings and simplicity of an Ethernet Lan are obvious, but are you aware of the problems associated with one? Like most wonderful things, there is a down side to be considered.

Ethernet is a carrier-sense, multiple-access, with collision detection (CSMA/CD), bus-style network. This means each device on the Ethernet listens (carrier sense) for a signal from another device. When one device wants to transmit to another, it waits until no other device is transmitting, and transmits its message. If two or more devices (multiple access) start transmitting at the same time, a collision will prompt both to stop, wait a short period of time, and try again.

This is the same protocol people use in a conversation. Each person waits till no-one else is talking before beginning. If one or more people should start talking at the same time, they all stop and one of them starts again after a short pause.

The conversation analogy also carries over into other potential problem areas of Ethernet. What do you do if a device has a lot to say and babbles continuously, like a friend who talks on and on without a pause? With Ethernet, there is no guarantee that a device will be able to transmit its message within a specified period of time. This is not generally a problem, as the message-carrying capacity (bandwidth) of Ethernet is rather high. Gaps between messages are normally large enough for other devices to get their say in.

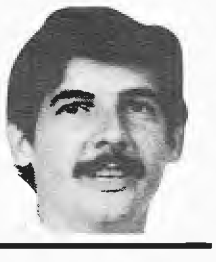
In contrast, a token-ring network gurarantees that each device will be allowed its turn to send a message. This is done because each device places its token on the network in sequence and each time the token comes around the network, the device has an opportunity to send a message.

Another problem is created by a tendency for the number of collisions to rise as more and more messages are sent. As the number of messages vying for the same bandwidth increases, the remaining bandwidth becomes a small fraction of its original size. Since the number of collisions tends to rise as bandwidth declines, this only makes the situation worse.

Valuable bandwidth is wasted by collision negotiation and retransmission of messages. The only solution is to allow for some spare bandwidth.

Let's look next at the reliability issues. Because Ethernet is a bus network, if anything on the bus fails, it has the potential for taking down the entire Lan.

By Henry Schneiker



The problem can arise when one of the cable interfaces fails in a way that interferes with other message traffic on the Ethernet. The cable can also be damaged, or a sliver of wire can fall into the tap hole during cable interface installation and cause a short in the cable. There can even be a bad or intermittent connection between two segments of cable. If anything interferes with the use of the Ethernet cable, the whole Ethernet will go down and all communication will come to halt.

Of course, you can buy instruments for checking the cable itself. They will tell you where the problem is. But are you willing to have the entire Lan down while this is going on? And what about intermittent cable interface problems?

The best solution is to divide the network into several pieces so that one failure does not take the whole network down. A number of products are available for doing this, the two most common types being repeaters and bridges.

A repeater is a device that takes the electrical signals from one Ethernet cable, amplifies them, and retimes and retransmits them on to the next cable. Two or more Ethernet cables may be connected to a repeater, depending on its type. In addition, a good repeater will not propagate faulty signals from one cable segment to the next.

A bridge is a device that takes messages from one Ethernet cable and retransmits them on another. Only messages addressing devices on other cable segments are propagated across the bridge. In this way, a bridge not only isolates two Ethernet cables for greater reliability, but also reduces the total amount of traffic on both cables. Messages local to a particular cable segment stay there.

Finally, what about the security issues? All traffic over an Ethernet cable is available to every device connected to that cable. It is very easy to connect an additional, undetected device to the Ethernet and eavesdrop on all data going by.

If users on the network are accessing files across the network and using access control strings with user names and passwords, those user names and passwords are also available to an eavesdropper, along with the target node name. This will become a much bigger problem as many DEC Vaxmates or IBM PC-class machines are connected to Ethernet via Thinwire.

If you are serious about security, you will not allow sensitive information to be sent over your Ethernet in an unencrypted form unless the Ethernet cable has been secured. Remember, where sensitive data is concerned, there is no security like physical security.

Ethernet, as with any other networking solution, has certain problems. However, once these problems are understood, solutions can be found, resulting in a workable network. The benefits of Ethernet outweigh its drawbacks by a wide margin in most instances.

- *Henry Schneiker is a consultant specialising in system management, data communications and desktop publishing.*

COMMUNICATIONS WORLD

Editor: Peter Scott
Contributing Editors: Tom Amos, Noel Bennett
Production Editor: David Blackburn

Communications World is part of the CW Online News Service, which includes sister publications Network World and Le Monde des Telecoms.

ADVERTISING:
National Advertising Manager: Steven Hedge
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CIRCULATION:
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MANAGEMENT:
Publisher: Alan Power

Communications World is published by Computerworld Pty Ltd
Managing Director: Alan Power
Directors: Patrick J McGovern
W Walter Boyd
General Manager Barbara Howell

Computerworld Pty Ltd also publishes: *Computerworld Australia; Australian PC World; Australian Macworld; Greenbook of Software and Related Services.*

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Communications World is published monthly and distributed to qualified charter subscribers in the communications industry.

Printed by Offset Alpine Printing Pty Ltd,
Silverwater, NSW.

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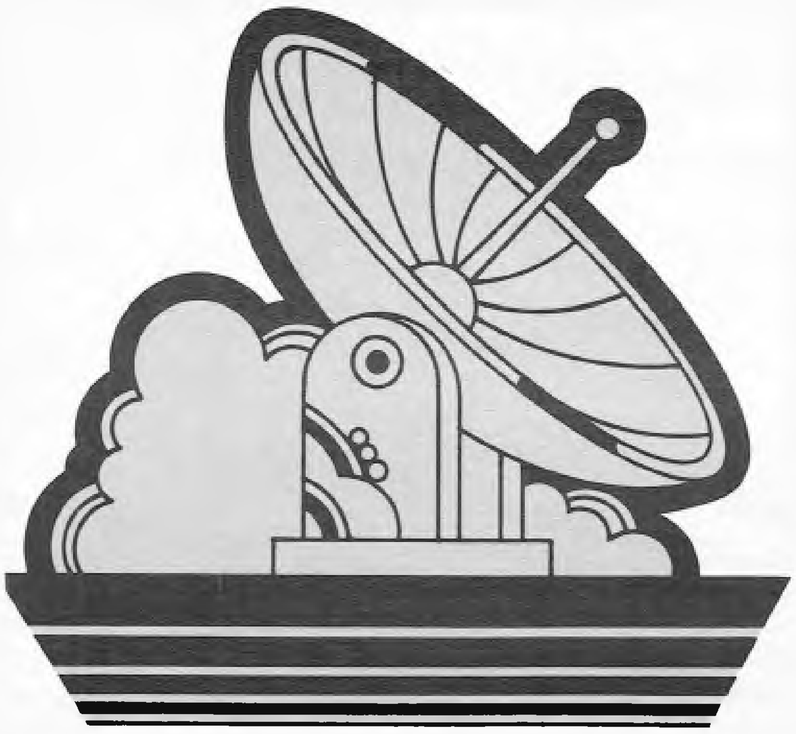

Think twice, says Alan Baley

Doubts about Vsat viability

USERS considering bypassing existing telephone company lines to provide two-way data communications circuits will not find very small aperture terminals to be a viable alternative.

To be viable, Vsats would have to be profitable enough for vendors to support an ongoing business and cost-effective enough for users to overcome the risks implicit in the technology.

Neither condition exists today on a broad enough scale to support an industry.

For years, Vsats have been celebrated as the salvation of the ailing satellite communications industry, and one-way applications in video and broadcast data are certainly successful. However, the market for Vsats with two-way, or interactive, data transmission is a different story.

Currently, the author is surveying hundreds of companies that have evaluated bypass. Preliminary results show that the number of users who have fully operational large-scale systems, which are used exclusively for two-way data transfer, can be counted on one hand — and none of these are solid success stories.

Maturing technology

One reason for this is that Vsat technology is still maturing. The fact that the technology is not fully developed is not surprising, given the enormous complexities in integrating radio frequency, digital, software, management and support systems, many of which involve new designs and programs.

Economics is the biggest obstacle to large numbers of users buying Vsats. Most users who have evaluated and declined using interactive Vsats cite the technology's long five- to seven-year payback period. Until more lease plans are available, they will be expensive and capital-intensive.

Consider a typical 500-site network, where the user instals 500 terminals and a dedicated central earth station (CES). Vsats today cost about $US10,000 installed; a CES will cost at least $US2 million to instal and operate for five years.

The monthly cost-per-site for a three-year and five-year amortisation is shown in the table. (In calculating amortisation, a 10 per cent cost of borrowing money is assumed.) This model makes some assumptions about costs, such as space segment transponder lease fees and maintenance, which vary by vendor and application. However, the predominant cost is always the Vsat.

Market expectations for pricing have always been unrealistically low, mainly due to over-zealous hype.

Because of extremely high start-up costs, no vendor will be able to achieve profitability until production volumes in the thousands are routine. Currently, less than 2000 interactive Vsats are operational.

Key questions are: How many users' networks today have sufficiently high per-site costs to justify the costs and risks of implementing interactive Vsats, and how big are such networks? The answers are not encouraging.

Large users tend to have lower average costs-per-site than small users because they have more intra-local access and transport area network alternatives with which to mitigate the effects of private-line tariff increases.

However, small and medium-sized users cannot justify a dedicated CES. As a result, a major share of the interactive Vsat bypass market may be in small and medium-sized networks, where many small users share vendor-supplied CESs to minimise the costs of back-haul circuits.

Asking a user to scrap his telephone company-based network in favor of a new unproven alternative that carries a five-to-seven-year commitment is asking too much. Furthermore, satellite interference has escalated in both the C and Ku bands because of increased activity.

Transponder management is becoming the weak link in the support chain. Full system backup strategies provided by vendors are inadequate and poorly understood by users, and vendors understate backup risks.

A large, multipoint terrestrial network consists of tens or hundreds of individual circuits; no single network failure can bring the entire network down.

Vsat networks, on the other hand, create several single-thread failure points — such as the satellite transponder, CES and the Vsat itself — which are prohibitively expensive to eliminate and are often out of users' control.

With a fixed lifetime, satellite failure is a certainty, and the probability of timely satellite replacement is at an all-time low due to a lack of launch capability.

The reliability of interactive Vsats is also a problem. It is common for interactive Vsat trials to be extended several times and one major user had to reset daily every terminal for months to get telephone company-level performance.

Both radio-frequency and digital electronics problems continue to thwart efforts to provide end-to-end availability equal to that of telephone lines.

Even when availability figures approach or beat those of telephone company circuits, the frequency of Vsat failures is likely to be much higher. This is primarily due to increased complexity.

Replacing relatively simple modems with complex Vsat electronics and associated software places more failure points on the network. Atmospheric, cosmic and phantom-carrier outages just add fuel to the reliability fire. Until hardware and software mature, Vsat users will see more failures of shorter duration.

This will increasingly irritate users, who will have to invoke restart procedures and deal with auditing lost transactions more often.

Market development

Interactive Vsat market development will be gradual but steady, and the winners will be those companies that build specialty applications which can be achieved only by using interactive Vsats. Examples might include transportable applications for users in fields such as forestry.

Finally, vendors are not yet providing adequate network management systems. While they may see this as icing on the cake, network management is an essential ingredient for users, most of whom cannot justify the use of Vsats for interactive data alone.

Providing network management integration, video, video and data integration, and other value-added products and services will become increasingly necessary for successful suppliers.

- *Alan Baley is a business development consultant who has worked in the Vast industry as a consultant. He is currently conducting a survey of US Vsat vendors and users.*

Cost of supporting a 500-site Vsat network

	Cost	Monthly cost/Vsat: 3-year amortisation	Monthly cost/Vsat: 5-year amortisation
Vsat	**$10,000**	**$323**	**$212**
Maintenance		80	80
Software support		**10**	**10**
Space segment		90	90
Central earth station	$2 million	$129	85
Total		**$632**	**$477**

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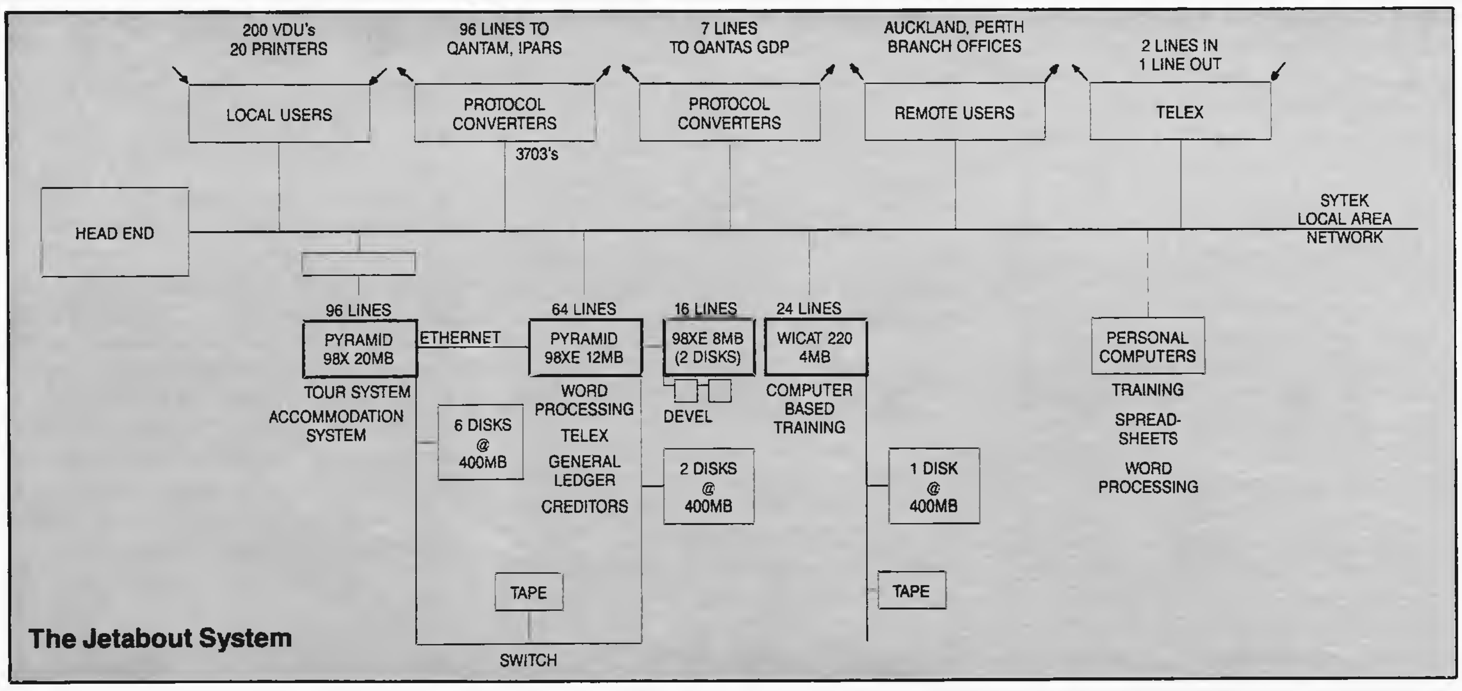
Climbing with Pyramid

Frank Crawford ... "only beginning".



The Jetabout System

By Noel Bennett

SYDNEY businesses can find that what they lose on the swings they gain on the roundabouts: Jetabout, for example, is finding that the comparative slow down in the numbers of Australians travelling overseas is more than compensated by increased visitors coming to Australia.

For Jetabout's manager of computer operations, Frank Crawford, the problem of effectively managing growth is evidenced by the installation earlier this year of a Pyramid 98XE Unix-based superminicomputer to rub shoulders with another similar model and a Pyramid 98X, together with a Wicat minicomputer.

Jetabout, wholesale travel and accommodation operator, is a division of QH Tours, a wholly owned Qantas subsidiary, and so takes advantage, where appropriate, of Qantas processing facilities and telecommunications links.

Crawford has been with Jetabout only for a short period. Previously he worked with a Pyramid machine and accompanying network at the Australian Atomic Energy Commission.

In general operation, travel agents contact Jetabout to make tour and accommodation bookings direct via phone, while larger agencies use Qantas's Qantam large computer/telecommunications complex for direct bookings with subsequent processing by Jetabout.

Of the communications aspect of his responsibilities Crawford said: "We are only at the beginning of getting the network organised properly so that it will run smoothly and transparently for users."

Ethernet link

The Pyramids have dedicated applications. The latest 98XE is handling systems development, the other 98XE word processing, telex and in the near future accounts now handled by Qantas Amdahl mainframes. The 98XE handles the actual tour and accommodation systems. The Wicat does computer-based training applications, with other work down the track.

The three machines are linked via Ethernet, previously to provide backup, but now to transmit work carried out on the development machine across to the application machines and also to bring word processing information across to the application machine for tour system documentation.

This information is for agency clients. Electronic delivery was much more efficient than copying on to tapes, said Crawford.

The load on the Ethernet link has not been sufficiently heavy to bring out any limitations, but plans are in hand to instal the Pyramid Network File Server (NFS), to make the Ethernet transparent to users.

Crawford said NFS would facilitate access by programmers to production machines when testing programs by avoiding the need for any special procedures. NFS also will eliminate duplication of information across machines and so remove any requirements for extra disk capacity.

Inhouse users tune into the pertinent Pyramid via a Sytek Localnet 20 local area network, from Network Solutions. The Wicat is also on this Lan. More than 200 Kimtron KT7 terminals are installed, with a small number of other terminals.

From the Lan, 96 lines go to the Qantam Ipars airlines reservation and bookings system and seven lines to Qantas for accounts processing. Auckland and Perth branch offices as well as the telex network also come into the Lan.

Connection from Jetabout's North Sydney offices to Qantam, in Sydney's central business district, is via four 9600 bits/sec leased lines. Two of these lines are frontended by System Technology 3703 protocol converters, handling the 96 terminals.

The third line, with a protocol converter from Protocol Computer Inc handling seven links, provides access to Qantas' telex facilities when required as well as Qantas' accounts processing facilities while the fourth remaining line is at present unused.

The Auckland and Perth branch offices come through a Scitec NPX 25 multiplexer, on to the Lan and through to the appropriate machine. The three Pyramids have a combined total of 176 ports and the Wicat 24, of which 16 are presently connected to the Lan.

Telex traffic, showing no diminution with the increasing number of facsimile machines, is handled by the dedicated Pyramid, allowing staff to send messages from their terminals. That Pyramid also generates hard copy from incoming telexes, for distribution to staff.

Crawford said the Lan supported this workload quite adequately. At present the load is spread across two channels operating at different frequencies and with a common bridge. However, with the growth in business, particularly from visitors to Australia, the number of channels may soon be increased to three, with each dedicated to a specific application. Only three months ago the number of channels was increased from one to two.

In the meantime, however, much thought is going into what applications should be designated to each of the two present channels and so make minimal use of the bridge.

Jetabout is now spread over four floors, but is to move to a new building where Network Solutions is working with the architects to ensure the Lan is laid to meet Jetabout's requirements. Crawford believes that one of the important tasks in managing networks is tracking down the nature of problems and their location.

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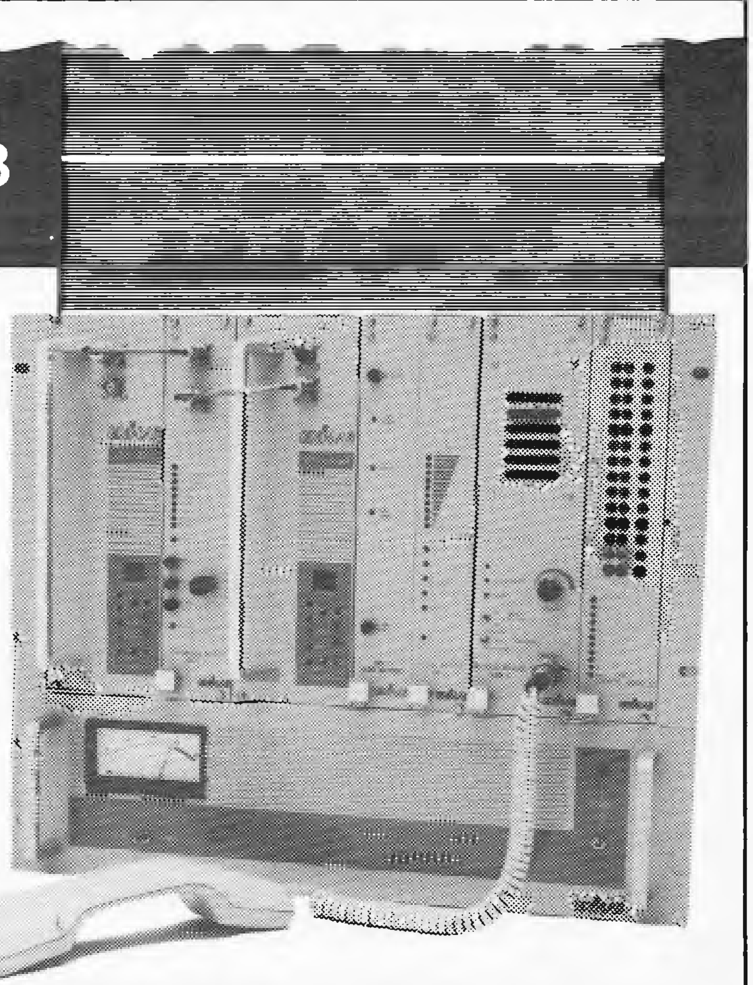

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Juggling with

Steve Guengerich hails an emer
architecture for applications softwa

TODAY, integrating dissimilar kinds of information for transmission over a network means juggling separate hardware and software products that process each type of information separately.

Most users can barely imagine being able to use a single application program to build compound documents from photographs, charts, text, voice, video and other elements. And while Integrated Services Digital Network (ISDN) partly addresses the integration problem by providing the capability to transport disparate information types over networks in digital form, it does not do anything for users at application level.

What leading-edge users dream of is the capability to blend any desired combination of information types within a single structure or file. The most promising method of answering that need is known to software developers as mixed-object architecture. This application level architecture, also referred to as multiple-object architecture, tackles the integration problem by providing a unified concept for standard software design.

The ultimate benefit of MOA for users will be the development of integrated application software that supports unprecedented functional — as opposed to merely technical — integration of all categories of digitised information.

As MOA-based applications become available, they will facilitate organisation integration of formerly separate corporate departments, such as telecommunications and data processing, by supporting functional integration of all information input and output devices, including display screens, keyboards, telephones and video cameras. In conjunction with ISDN, applications that utilise MOA will likely enhance the role of the chief information officer in organisations and influence the corporate information policies he establishes.

Removing borders

As an emerging standard architecture for applications software development, MOA has the potential to erase the lines that are at present drawn between information systems that handle "objects," or information types, in proprietary ways. The objects of primary importance to users include voice, text, graphics, photographic images, bar codes, spreadsheet data, audio and video. MOA provides a method of combining those objects in an integrated bit-stream that constitutes a single file or document.

The three basic categories of data stream architectures specify the format of data representing the content of a stored document, the format of data for document interchange and the format of data for communications between devices on a network. MOA is an advanced document content architecture.

The primary IBM data stream architectures for these categories are, respectively, document content architecture (DCA), document interchange architecture (DIA) and systems network architecture. The major alternatives to IBM's architectures are those developed by the Consultative Commitee of International Telephony and Telegraphy (CCITT).

The corresponding CCITT standards for communications architecture are a series known as X.400, which covers the first two categories, and the open-systems interconnect (OSI) architecture in the third category.

All of these architectures provide a standard for developing communications software that will allow sharing of information among many different types of computer systems in a network. In general, document content architectures are the fundamental integrating mechanisms. They allow software to describe the format and meaning of the content of a document to be interchanged in a network.

A document content architecture is strictly concerned with the realm of "format" and not concerned with "process". It does not dictate in any way how the document is to get from one place to another, to whom it is to go and so on. For IBM, "process" is the duty of DIA.

The goal of a document content architecture is to provide a way of representing a document in a canonical, or standard, format — one understood by all programs that may be called upon to manipulate it. For example, a word processing program that utilises a standard document content architecture is relieved of the burden of having to understand and interpret the files of dozens of popular word processors. It only has to be able to recognise, intepret and represent a document in a single format.

Each object type has unique characteristics that determine its format so that it can be interchanged as a part of a document. Up until now, text has been the only object for which vendors have largely adopted a standard document content architecture, loosely based on IBM's DCA.

One way of dealing with other objects, such as voice or video, is to develop other document content architectures for them. However, a proliferation of architectures decreases the opportunity of minimising the number of standard formats, and does not completely address the problem of how to integrate the objects to facilitate interchange.

MOA is the complete solution to this interchange problem. A mixed architecture can be fashioned from the strengths of the existing document content architectures to provide a common language for documents and their many objects so that they are intepretable on any system. MOA provides the integrating framework necessary to intermingle and interchange freely the spectrum of information present in an organisation.

From a strategic viewpoint, MOA provides an important link in the plan to bring together the many resources of an organisation. From a practical perspective, MOA means change — change in the sense that any MOA standard that emerges must be different from all of the present document content architectures, but similar to them all.

Therefore, conversion programs, called transforms, are necessary to move MOA documents into an existing software product or to move existing documents into an MOA product. These programs are

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MOA

ging standard e development

an interim solution that will not be necessary once software companies build MOA into their products from the ground up rather than adding MOA capability to existing products.

MOA by itself specifies only part of the architecture necessary to define a complete data stream. A set of specialised object content architectures completes the picture. In the past, document content architectures combined the functions of MOAs and object content architectures for each single object type. In the future, if standards are agreed upon, multiple document content architectures will be phased out in favor of a single MOA and a variety of object content architectures.

Because products that implement MOAs are still under development and not yet available, it is too early for users to make specific preparations for them as part of their network planning. In general terms, the likely short-and long-term impacts of the architecture include the following:

- ■ Application programs based on MOAs will accelerate widespread user acceptance of ISDN. ISDN's main objectives — to inhibit further evolution of separate voice, data and video networks and to provide the user with a single, simple network interface — are compatible with those of MOA.
- ■ General document content architecture research by vendors will be phased out in favor of MOA research. Vendors' first MOA-based products will focus primarily on revisable and final-form text objects.
- ■ Development of office systems processors with more real and virtual main memory will continue in order to support manipulation of complex, multi-object document structures. The introduction of the 80386-based Deskpro microcomputer by Compaq Computer Corp with the potential for 4 gigabytes of main memory and 64 gigabytes bytes of virtual storage is confirmation of this direction.
- ■ There will be a rebirth of the merging of voice and data functionality into integrated voice/data workstations (IVDW) that can resolve mixed-object data streams. With their merging of handset, high-resolution screen, keyboard and microprocessor, IDVWs such as the Cedar/Cypress/Juniper trio offered by Rolm Corp will become the de facto desktop workstations for managers and executives.

Higher speed transmission devices and higher throughput channels will be required to accommodate affordable transmission of the larger MOA data streams. The trend toward use of — and lower prices for — T-1 resources at 1.544M bit/sec transmission rates off-premises networks must continue.

- ■ There will be a heavier reliance on the cluster controllers, front-end processors and general departmental processors in networks. These units will be necessary to relieve some of the processing burden of the data stream from the mainframe or other central processing operations.
- ■ There will be continued developments of integrated multi-object applications, whether host-based or micro-based.

Growth path

Digital Equipment Corp's Vax line of computers and IBM's new 9370 line of customer-installable, mainframe-compatible minicomputers will form a large hardware base amenable to running large MOA applications. These will provide a growth path for user applications within stable, integrated vendor environments.

The developers of the first MOAs will secure positions as market leaders in the area of standards development for mixed-object applications software.

The "open architecture" approach to product development, with all major vendors making more information available to one another and third parties, will particularly benefit MOAs, because one of their strengths is the flexibility to incorporate new object content architectures in the data stream as they are developed.

In any case, there is a need for increasingly sophisticated software to help users get the most out of their hardware resources. MOA provides a foundation to achieve this goal. It provides a structure for developing the business applications that can deliver the integration and performance users need.

● *Steve Guengerich is senior consultant for MCM Systems, a general business systems consulting organisation.*

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Vax terminal emulator suits all the Macs

By Henry Schneiker

WHEN Apple Computer Inc's Macintosh first came out in 1984, it lacked useful software and its hardware was very restrictive, but the user interface gave hint to the product's great potential. For the past two years, however, finding a terminal emulation and file transfer program that worked well was a problem.

Telecommunication software was late in coming to the Mac. First came Mactep, a minimal freeware program. Months later Apple shipped its VT100 emulation program, called MacTerminal. Then came a flood of terminal emulation programs from every corner, from shareware to Hayes. Even in their current form, most of these programs leave a lot to be desired. Most of them lack some critical features or are so unreliable as to be useless.

One of the better programs I have had the pleasure to review is Mac240, a Digital VT240 terminal emulation program that also supports Kermit, Xmodem and Ascii file transfer modes and has a directory of systems. Mac240 has most of the features necessary to be a good companion to your Vax computer. All versions of the Macintosh are supported.

Mac240 is the only advertised VT240 terminal emulator for the Mac now on the market. It supports most of the standard VT240 features, such as dynamically redefinable character sets (DRCS), Regis and Tektronix 4010/4014 support, and color and intensity emulation with patterns. In addition, Mac240 has a VT100-compatible VT125 mode and a VT52 mode.

COMMUNICATIONS WORLD REPORTCARD

Mac240 7.5	Unacceptable	Poor	Satisfactory	Very Good	Excellent
Ease of Learning/ Documentation	☐	☐	■	☐	☐
Performance	☐	☐	☐	■	☐
Ease of Use	☐	☐	☐	■	☐
Error Handling	☐	☐	☐	☐	■
Value	☐	☐	■	☐	☐

SUMMARY: Mac240's documentation and ease of learning are satisfactory; the manual could be improved, as could setup of communications parameters. The performance is very good, providing a good array of features. Ease of use is very good, as usual with the Mac interface. Error handling and support are excellent. Value is satisfactory compared with other, less expensive Mac communication packages.

DETAILS: Mac240 is available from White Pine Software for $US199. It comes as a two-disk set with Mac240 and a system folder on one disk and Mac240 and several support programs on the other. It also comes with a comprehensive manual.

AVAILABILITY: We are not aware of an Australian distributor for Mac240. However, its developer, White Pine Software Inc, can be contacted at 75 Route 101A, Amherst, New Hampshire 03031. Tel: (603) 673 8151.

The Macintosh has a few problems emulating those parts of the VT240 that are not supported in hardware. The first comes from the screen resolution. The Mac is only 512 pixels wide, while the VT240 is 800 pixels. Therefore, the images produced in graphics mode are scaled for best fit on the screen.

For graphics that do not contain text, the image is adequate. Text within the graphics suffers the same problems that scaled screen fonts on the Mac have always had. Small text sizes become difficult to read.

When scrollable windows are implemented in the future, the need for scaling will go away. The 128K-byte Macs do not have enough memory to store a full graphic image, resulting in truncation of the right portion.

The next problem is with color and intensity. The Mac has black-and-white pixels with no color or shading. Therefore, all colors or shades must be approximated with patterns. Mac240 keeps all the color and intensity information, but displays a pattern instead. The patterns displayed for any given color or shade are selectable from a small palette.

There is also a problem with the 132-column mode. The Mac's screen has only enough space for 128 very narrow (four pixels wide) characters. Because the window for displaying text has no scroll bars, the text is truncated starting with the 129th column. A future release will have scrollable windows, and this problem should go away. Amazingly though, the text on the screen is still readable.

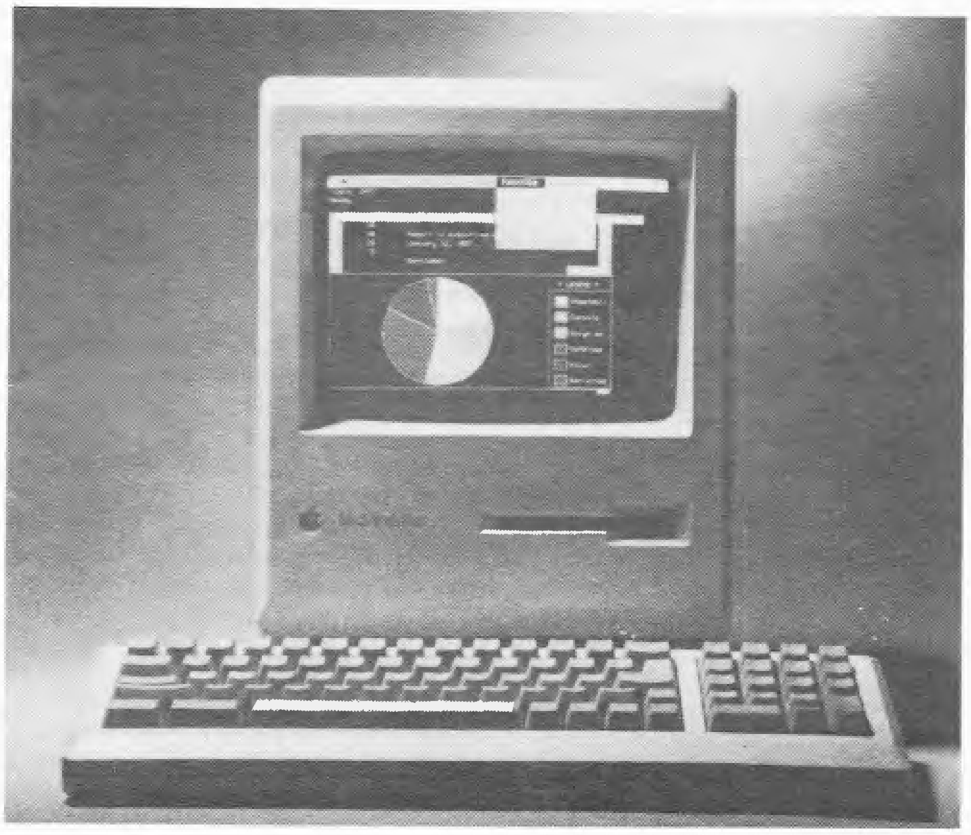
Last, but certainly not least, is the lack of keys to type on. The VT240 keyboard has lots of keys in addition to the standard Qwerty set. With Mac240, the function keys F6 to F20 are available through the function menu, and the rest are available through other menus or key sequences.

The editing key pad and numeric key pad are both available through the key pad menu. In addition, Mac240 supports the Apple numeric key pad, Assimilation Inc's Numeric Turbo and the Mac Plus key pads. With the Numeric Turbo, the hyphen key must currently be used as the PF2.

The Mac's command key (the cloverleaf) is used for the control key. This leaves the option key available for generating the characters used for foreign language support. The next key that is conspicuously absent is the Escape key. There is no equivalent here; you must type in a Control-[.

A limitation in the VT125 emulation mode is that the full Ansi control standard is not supported. The Ansi standard is mostly a subset of the VT125 and should not cause any problems when used with DEC hosts. The VT125 mode is compatible with the VT100 terminal.

Mac240 supports the best set of file transfer protocols: Kermit and Xmodem. Kermit is the protocol of choice when transferring files between the Vax and the Mac. You can get Kermit for your Vax from a friend or the Decus tapes. A future version of Mac240 will add a Macbinary option to Kermit, enabling Macintosh files to be more easily stored on the Vax.



The Mac 240 ... recommended as "a very solid program".

Xmodem is available in two forms: with and without Macbinary. Macbinary allows all three parts of a file (data fork, resource fork and finder header) to be transferred, so a Macintosh file with its proper icon can be created on the destination Mac. The file may be stored in MacBinary form on non-Mac systems without harm.

And, of course, you can capture Ascii text sent from the host to the Mac or send an Ascii text-only file from the Mac to the host without any protocols. This method of file transfer provides no form of error detection or correction.

> *'Error detectors and recovery worked well with both Kermit and XModem.'*

File transfers at all communication rates (300 to 19.2K-bits/sec) are limited to a maximum of approximately 350 char/sec. The highest throughput was achieved while receiving a file with the Xmodem protocol, and the slowest was straight Ascii text capture. It is possible the host was the limiting factor with the protocol transfers. A Vax-11/780 runs in about 60 per cent kernel mode when doing an Xmodem protocol transfer at 9600 bits/sec.

Error detection and recovery worked well with both Kermit and Xmodem, even on a high-noise line (20 per cent of packets received with errors).

Another of Mac240's useful features is the system dialling directory. Each system is given a name, a modem dial string and a set of communication attributes. The name of the system then appears in the dial menu.

I tested version 1.21 of Mac240 and found it easy to learn and use. The documentation for this version has several production problems, including ratty printing and a tight binding that caused pages to bind up. The content, however, was useful and well-written.

The manual contained appendices giving keyboard layouts and translations, Regis graphics, cablemaking instructions and a listing of the VT240 control codes. The index was adequate and correct.

Except for the specific problems previously mentioned, the program functioned well during testing. Terminal emulation worked well with the standard DEC products tested, including TPU, EDT and SPM.

Using a DEC editor with a Mac takes some getting used to because of the lack of keys. If you do not have a numeric key pad on your Mac, key pad mode is useless. Having to pull down a menu and select an item for easy key press quickly becomes tedious.

An alternative is to ship the file to the Mac, edit it there and ship it back. For relatively short files, long editing sessions (five minutes or more) are more efficiently done on the Mac.

There are several other miscellaneous considerations. Mac240 is not copy protected, so it may be used with a Ram disk or a hard disk. It takes about 160K-bytes on disk. The Key Caps desk accessory can be used to show the VT240 screen fonts. Flow control is done with Xon/Xoff only. There is no provision for DTR flow control.

The print screen works with the laserwriter, but the smoothing can make some characters difficult to read in 132-column mode. You can copy either text or graphics from the screen to the clipboard, but copying text does not work if the text on the screen is the result of a graphic image.

Local echo and the blink screen attribute are not supported.

All in all, however, Mac240 is a very solid program and one to be recommended. The emulation mode worked well, given the limits of the Mac's small screen. Truncation in 132-column mode was my biggest objection.

The Kermit, Xmodem and Ascii file transfer protocols all worked well, and the system directory, with communication parameters on a per-system basis, was very nice and worked well once the user interface confusion was worked out.

Given the comprehensiveness of Mac240, I can now delete most of the other terminal emulation programs I have kept to fill in all the gaps.

• *Henry Schneiker is a contributing editor to* Digital News. *He writes the communications column that appears in each issue.*

Aussat spells out changes

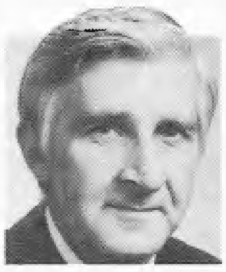
SYDNEY — Aussat's requirements for the first two of its second generation satellites were spelt out in detail to a briefing attended by the cream of the world's aerospace fraternity in Sydney last month.

Heeded attentively by potential prime and sub-contractors from an impressive variety of countries, including the USSR, China, the US and Japan, Aussat personnel explained the requirements of the B1 and B2 satellites and explained the company's draft request for tender document.

The current systems are three Hughes HS376 spacecraft, two of which (A1 and A2) were launched in 1985 by the Space Shuttle, and the third of which is due for launch this year by the Ariane rocket.

Total system capacity of the first generation satellites (including A3) is 45Ku band transponders, which are expected to have 90 per cent use by the end of 1988. The predicted end of life limits for these spacecraft are March 1993 for A1, January 1994 for A2, and 1997 for A3.

At present these satellites are supported by eight major Aussat earth stations and a number of customer-owned ground segments, which include about 100 earth stations operated by the Department of Avaiation as part of its ground-to-aircraft communications network, and planned corporate facilities to make use of the recently announced Starnet (Communications World, January, p1).



> *The opportunities for Australian industry are enormous . . . but we must grasp these opportunities*

Dick Johnson, general manager of Aussat, said that by the end of 1988, 23 of the 45 available transponders were expected to be used for radio and television, 15 for voice and data, and three by offshore concerns (NZ).

He claimed that growth was envisaged in all segments, and particularly the NZ domestic services, where were expected to expand their requirements from the three transponders currently available to eight transponders all up.

The first of the second generation spacecraft — B1 and B2 — are being planned now to cope with the market growth as the first two of the first generation satellites reach maturity. Johnson said that A1 and A2 would be replaced by the larger B1 and B2 around 1993 to provide continuity of services and growth capacity. A3 is to be replaced by a third satellite, currently codenamed C1, around 1997.

Johnson said specifications of C1 were not yet known, but it would be tailored to future market and policy needs.

B1 and B2 are to have 38 Ku band transponders, so that when they are both in service with A3 Aussat will be able to offer 53 Ku band transponders.

Johnson claimed the 38 high power transponders on B1 and B2 will satisfy the needs of existing customers, meet NZ domestic requirements and provide moderate growth beyond 1993. New markets, such as mobile services or scientific applications, could be served by "add-on" packages on B1 and B2, he added. A degree of flexibility in matching future changes in market directions is available through the as yet unspecified C1.

The technical requirements for B1 and B2 are for 2500kg medium class, 3000-watt spacecraft, giving them twice the weight and three times the power of the first generation satellites. Each must have a 10-year operational life in addition to any in-orbit storage that may be required before commissioning.

To service the Australian Ku band system each must have 15 high-power 54MHz transponders with enhanced performance national beams and high performance spot beams. The NZ Ku band will be serviced by four 54MHz transponders and a special NA national beam.

The RFT also calls for trans-Tasman switchable connectivity on two transponders, although Aussat is not now allowed by government policy to provide communications between the two countries — an operation that falls solely into OTC's domain. The RFT also calls for special isolation measures to prevent interference between the Australian and NZ beams.

Aussat expects to use its first generation experience to control most of the second generation telemetry, tracking and control requirements itself, so contractors will be expected to supply only spacecraft-specific hardware and software. The additional equipment is likely to be limited to upgrades of Aussat's Belrose and Perth facilities, and the integration of first and second generation systems. This approach is expected to maximise Australian input and provide cost savings.

Johnson carefully spelt out to overseas visitors the requirements for Australian involvement in the contract. He said the objectives of such involvement were to achieve a high level of industry participation in the program, to develop industry capabilities in space related areas and to focus on capabilities with prospects for competitive application in future Aussat and overseas space programs.

To meet those objectives, Aussat has decided that tenders must allow for technology related Australian subcontract work on the program of not less than 4 per cent and excluding any scientific options, which should have 40 per cent Australian value added content. In addition, tenderers must meet normal offsets requirements of 30 per cent, which should include a high level of activity in space-related activities.

Graham Gosewinckel, managing director of Aussat, reinforced Johnson's comments. He told the briefing that Aussat's expansion program had the backing of the Australian Government, and while a lot of aerospace companies were looking to bid and succeed on the contract, they had to realise the emphasis that had been placed on the involvement of Australian industry. He also pointed out the need for Australian companies to be truly competitive in their efforts to become involved.

"The opportunities for Australian industry are enormous. But it is up to Australian industry to grasp those opportunities," he concluded.

Aussat's planning timetable for its first two second generation satellites

April, 1987	Aussat decision on final system concept
May/June 1987	Government approval of system concept
July 1987	Issue of RFT
November 1, 1987	Closing date for tenders
Nov 1987-March 1988	Tender evaluation and contract negotiation
Feb/April 1988	Aussat decisions on contractor selection
May/June 1988	Government approval to execute contract
July 1, 1988	Space segment contract date
March 1993	Latest B1 commencement date
January 1994	Latest service commencement date

OPPORTUNITY

Ampec Technologies Pty Ltd, a newly reformed computer peripheral and component distributor, has recently secured the sole Australian distributions to a range of market leading high technology products from the United States.

These products have already attained market leading status in the U.S. and are excellently positioned to capture huge sales in Australia.

In keeping with this growth opportunity the following opportunities have become available.

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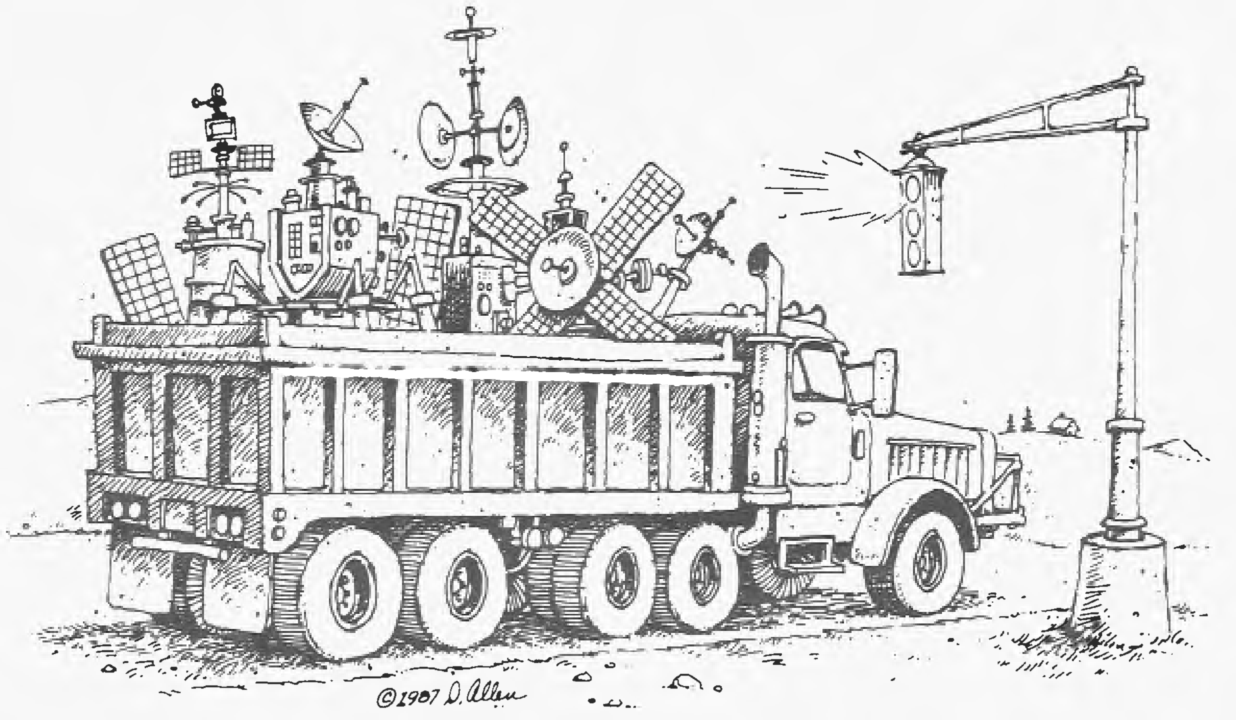
An ailing industry faces a new future says Lynn Haber

Upward turn predicted for satellite communications



PERHAPS the greatest irony for the satellite industry is that as a result of recent negative publicity surrounding failed satellite launches and the explosion of the United States space shuttle, *Challenger*, both players and users have a greater understanding of this market.

The director of a market research company, Link Resources, Inc, in New York said that overall "the satellite industry has been in a stalemate for the last couple of years."

The director, William Reed, said: "On one hand, there's been a glut of transponder capacity, and on the other, there's been a wait-and-see attitude by endusers as to whether terrestrial solutions will provide the same efficiency as satellites."

But now, industry analysts expect that the satellite industry will stabilise in both performance and cost. At the same time, analysts believe that users of communications services will demystify their network needs and explore the variety of communications options available to them.

"There's been a lot of proposal writing over the past few months by companies evaluating what to do with their satellites," Reed said. "There's also been a lot of endusers looking into Vsat networks and private terrestrial line usage."

When all this network examination is done, satellite service industry revenue will reach $US4700 million by 1990, up from $US1570 million in 1984, according to Link.

Link says the recent difficulties experienced by the satellite industry are not enough to completely stunt the steady growth of the domestic market for satellite services.

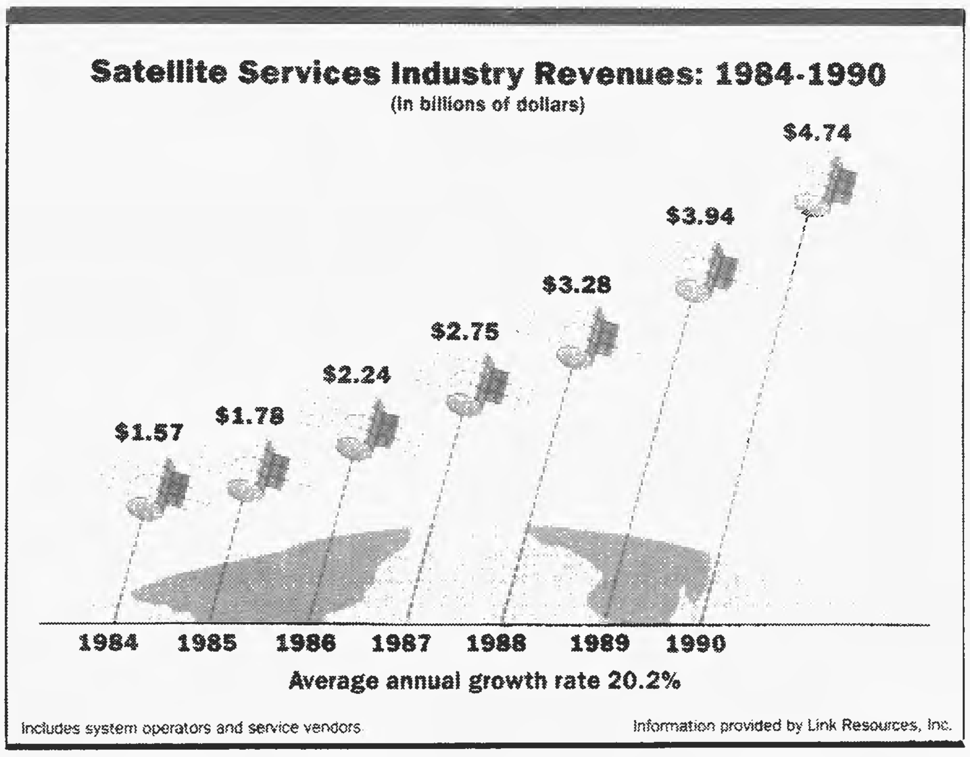
But the setbacks are dramatic enough to force a substantial change of direction in the markets being targeted for services and in the prices for satellite transmission capacity.

Therefore, unlike the mid-1970s when the domestic satellite market was driven by broadcasters and CATV programmers, the industry will begin to see business communications — in particular, data transmission and one-way broadcast videoteleconferencing — providing a large percentage of the growth of satellite service revenues for the coming five years.

Reed contends that the differences between system operators and satellite service resellers are blurring. Traditionally, system operators launch, own and operate satellites, while satellite service resellers are brokers of satellite transponder time and associated services. A merging of services will occur because of cost factors, the present transponder glut and growing competition — factors that when combined, are altering the conventional roles of industry participants.

Ever since the first commercial satellite was put into orbit more than 10 years ago, there has been little public understanding of satellite technology. Additionally, service providers have, during the years, redefined the type of communications services that could best be provided by these objects in geostationary orbit 36,000km above the earth. The level of enduser awareness of satellite technology and services continues to remain low because the satellite industry has done a poor job of providing information.

But now, the industry is about to catch up. For example, the problems regarding technology have been related to launches rather than to the ability to provide service. There is a greater risk involved in getting a satellite into orbit. This risk factor, while it may not have a direct effect upon a satellite's ability to provide reliable service, nevertheless affects endusers as the cost of launches and insurance escalate dramatically.



Includes system operators and service vendors

Information provided by Link Resources, Inc.

Even before the *Challenger* disaster, the satellite insurance industry was poor.

In February 1984, two $US75 million communications satellite launched by *Challenger* failed to achieve orbit, rendering them useless. One satellite, the Westar VI, owned by Western Union, was insured for $US105 million, and the other, the Palapa B-2, owned by the government of Indonesia, was insured for $US85 million.

While the satellites were retrieved, insurers' relief at the rescue was psychological only — the underwriters still paid $US180 million on the loss.

After footing the bill for the retrieval, which cost in excess of $US10 million. The insurers recouped only $40 million for the two satellites, which suffered damage and needed to be refurbished.

Whereas two to four years ago each satellite on a launch could be insured for $US100 million, today, companies are underwriting only $US60 million to $US80 million in insurance capacity per launch, regardless of the number of satellites.

In most cases this would not cover the capital investment on one satellite, much less two.

But a US government policy enacted since the *Challenger* disaster that states that the National Aeronautics and Space Administration will not launch any commercial satellites has created optimism among both the satellite and insurance industries that stability may be reclaimed both in the sky and on the ground.

Private manufacturers of launch vehicles — such as McDonnell Douglas Corp, General Dynamics Corp, and the Martin Marietta Denver Aerospace Division — are announcing plans to pick up the commercial satellite market where NASA left off.

The potential privatisation of launches is good news to the insurance industry, one analyst has claimed. "It is easy to speculate on the success, the safety and reliability of these companies because they have a proven track record," he said. Up to now, these companies have been producing launch vehicles for military applications.

The analyst said that if an independent launch vehicle industry is established, the satellite insurance industry, within a two-year-time period, will regain confidence and expand.

The cost of satellite services to endusers depends on how the space industry rates stabilise, the available amount of satellite transponder capacity, demand for service and how competing communications technologies shape up.

While the cost for satellite services today has not reflected the upheaval in the space industry, endusers can expect to see higher service costs as new satellites are launched to replace old ones.

Another important cost factor is the availability and use of satellite transponders — devices that receive and transmit signals. Older satellites have 12 transponders whereas newer ones have 24.

According to Link, at the beginning of 1986 nearly 600 total transponders were in operation. Link estimates that by 1990 there will be approximately 960 total transponders available.

Transponder capacity and cost vary. There are C-band transponders with frequency ranges of 4 GHz to 6 GHz and Ku-band transponders with ranges from 12 GHz to 14 GHz. Originally, C-band was a more popular technology for satellite systems, but recently, Ku-band technology has been gaining favour. One reason behind its growing popularity is that low-cost Ku-band Vsat technology has become available, encouraging user interest.

By year-end 1984, there was an overall transponder glut, largely due to overzealous predictions for transponder need. According to Link, the cost of a Ku-band transponder in 1985 ranged between $US130,000 and $US150,000 a month. Link analysts do not expect demand to catch up to supply, and they predict that prices will stay about the same and stabilise in 1987 to 1988 in anticipation of huge increases in capacity expected for the 1989 to 1990 period.

Another area that will affect costs is competition from other communications vendors, most notably those offering long-haul, fibre-optic networks.

While satellite network services and fibre-optic networks will compete in certain application areas, service vendors say they believe these two technologies will, in fact, complement each other.

Industry analysts and participants agree that satellites have an important role to play in a corporation network strategy and that the technology can offer application-specific services more cost-effectively than other communications methods.

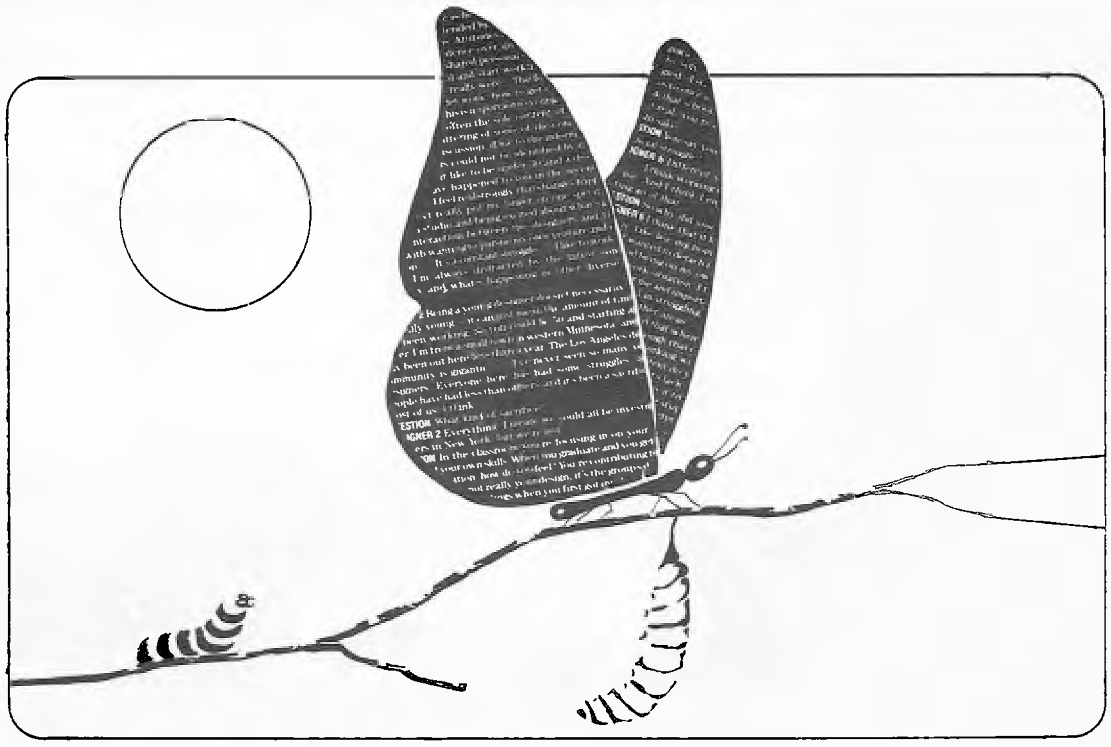
Satellites can provide voice, data (such as facsimile) and video (teleconferencing, broadcast and CATV). Analysts agree that data transmission will experience the most rapid growth through to the end of the decade, due, in part, to the demand for high-speed data transmission by business. Corporate users are also expected to use videoteleconferencing capabilities.

Whichever application a company decides is right for satellite transmission services, it should know that there are time and cost options for such services.

The bottom line is that network managers must understand that satellite technology is just one more transmission alternative they need to know about to make the most effective and efficient use of their own networks.

Rebecca Hurst examines the boom in faithful facsimiles

NOW THE FAX MARKET IS TAKING WING



MENTION improved technology, standards and ease of use, and the first thing that comes to mind is not likely to be facsimile machines. Yet all these qualities describe the faithful fax that has served users since the mid-1960s.

The same qualities are contributing to a surge in fax purchases after nearly 20 years of slow, steady growth. Fax shipments in the US rose to 157,000 in 1985, from 89,000 in 1984 and, according to Julie Weiss, telecommunications group analyst with Dataquest, 1986 shipments were about 190,000 to 195,000.

Future growth appears equally strong. The US facsimile market alone will reach $US1000 million in 1990 from $US525 million today, predicts Nancy Erskine, program director for corporate publishing strategies at the Gartner Group. This growth will come not only in large corporations in which faxes already have a stronghold, but also in small- to medium-sized companies and even in the home-based consumer market.

Among big companies, a thrust toward decentralisation is expanding the market. Until recently, business used a single, central fax, often in the mail room. Recently, purchasing managers reported that they did not know how many facsimile machines they used, said Leslie Townsend, senior consultant for International Resource Development. "They didn't know how many faxes they needed because the faxes were coming out of department budgets."

Faxes are enjoying burgeoning growth in small- to medium-size companies that employ between 20 and 250 people. There are about 697,000 such firms in the US. There is a huge potential market as companies increasingly become aware of faxes' capabilities and are able to afford them as prices come down.

Consumer doors open

Facsimile vendors have also begun penetrating the consumer market in the last year. Although there are 10 million home industries in the US, such as consulting and catering businesses, this new market is still very small. To attract smaller companies and the consumer market, facsimile vendors are using new packaging distribution channels. Some vendors are beginning to offer low-end facsimiles that are small, portable and in decorator colors such as pink and white.

Other vendors are turning to retail. For example, Canon USA, is targeting its Faxphone 10, a combination facsimile and telephone, toward home business use.

The impetus for the fax's growing popularity is a combination of standards, education, pricing and features. Unlike many communications media, facsimiles have adhered since 1968 to a single set of standards developed by the Consultative Committee on International Telephony and Telegraphy (CCITT)

The standards are divided into four groups, but CCITT has defined each successive standards group so that all facsimiles adhering to the standards can communicate with one another. As a result, companies or departments can buy a facsimile knowing it will work with the great majority of other fax units in use today.

Education about faxes has increased business's awareness of the machine's potential, while a drop in prices and new and improved functionality and features are also boosting fax use.

One factor is the dominance of Japanese vendors. In Japan, faxes have played a much more important role in communications because they are an effective way of transmitting Japanese Kanji characters. Therefore, Japanese vendors have pushed the development of features that enhance ease of use and have steadily driven down prices.

As a result, business managers can choose from a variety of easy-to-use facsimiles for a reasonable cost. These faxes are likely to include several popular features such as automatic dialling, broadcasting, and store and forward.

Broadcasting allows transmission to several places at once rather than separately. The store-and-forward feature lets users scan information into a fax, enter a phone number for a receiving fax, and transmit the information at a later time.

Most facsimiles in use conform to CCITT Group III standards. This is likely to continue for the next few years. Group I, II and III facsimiles all work over standard public phone lines, but earlier Group I and II faxes are analogue and take anywhere from two to six minutes to transmit a page. Group III and IV units are digital.

All Group III machines can transmit a page in less than a minute, and many can do so in less than 16 seconds. Also, the resolution of Group III faxes is 200 dot/in, compared with 96 dot/in, for Group I and II.

Group IV too far

Group IV facsimiles are faster than Group III units, and have higher resolution standards. Transmission rates for Group IV are no greater than 10 seconds a page, and some five seconds. Moreover, Group IV's resolution is 400 dot/in; greater than the 300 dot/in resolution of laser printers such as Apple's Laserwriter.

Despite these advantages over Group III machines, Group IV faxes will not be used widely for some years. Most major facsimile vendors have Group IV units, but the $US10,000 to $US15,000 price tags are prohibitive. People are reluctant to replace their present machines which cost several thousand dollars less.

Perhaps more importantly, many companies do not have the communications capabilities to support Group IV faxes. Group IV faxes need 56K-bit cables running on wideband networks. Two common carriers of Group IV are expected to be T1 networks and Integrated Services Digital Networks (ISDN). However, it will be at least two to three years before the availability of ISDN and T1 networks is great enough to make Group IV machines viable.

Weiss is less optimistic. "Group IV facsimiles on ISDN will not be a reality until the mid- to late-1990s," she said. Until then, there will be limited use for Group IV because most companies do not run private digital lines. "The cost of converting the central office switch to ISDN is phenomenal." Consequently, Group III still offers best performance for the dollar.

> 'Some vendors are beginning to offer low-end facsimiles that are small, portable and in decorator colors such as pink and white.'

Group III facsimiles are available in a proliferation of both standalone systems with a variety of features and combination products that add copiers or telephone. The combination products are aimed at users who want fewer devices on their desks and a chance to control the corporate or departmental budget.

The most exciting development in combination fax products is the personal computer fax board. It is perhaps the most active area of facsimile innovation, garnering interest and products from both fax vendors and PC software developers.

Facsimile companies, such as Panasonic and Murata Business Systems introduced PC fax products last year. Several software and peripherals vendors, such as Datacopy, Gammalink, and Advanced Vision Research announced PC fax packages as well. However, only Panasonic and Gammalink have made their products generally available since 1986. The others are due to ship sometime in the first half of 1987.

The basic PC fax package consists of a modem board and software that converts computer files to facsimile format. The modem board, which conforms to Group III standards, fits into IBM PCs and compatibles. Using a fax conversion product with a PC, a user can send files to any fax without printing out the material first. Because of the nature of faxes, these files can include graphics as well as text.

PC faxes also allow organisations to leverage their PCs by adding fax functions without fax costs. Most PC fax conversion products are about $US1500 less than standard Group III machines.

PC faxes are also viewed as remote scanners in businesses that perform computer-aided publishing or design. Users can scan a drawing into a PC and send it to a remote fax. An online parts catalogue that provides descriptions and illustrations can be updated through the PC fax and sent to branch offices, for example.

The potential installed base of PC fax users is huge. There are 20 million to 30 million IBM PCs and compatibles in use today. However, PC faxes will not usurp their standalone siblings. A large percentage of documents sent via facsimile are not generated by PC. As a result, PC faxes will only enhance the market.

● *Rebecca Hurst writes for* Computerworld Focus.

COMNET '87

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MAKING ENDS MEET

Dr Dixon Doll, president of DMW, and Dr Kenneth Thurber, president of Architecture Technology Corp, will present a series of two-day seminars on communications and networking technologies in a unique conference and workshop style in Australia and New Zealand in July.

Dixon Doll and Ken Thurber are world-renowned authorities, and their leadership of the first Comnet outside the US is a coup for Australian and New Zealand computer and communications users, specialists and policy-makers.

Doll will define his company's step-by-step methodology for identifying strategic applications on the network. This is a detailed walkthrough which will help the user avoid unnecessary risks such as vendor lock-ins and exploit opportunities and economics that result from a carefully planned strategy.

Thurber will examine the IBM Token-Ring vs. other Lan choices. Participants will get an across-the-board overview of announced products, future plans, compatible products and IBM's overall strategy with this technology. Attendees will discuss the Token-Ring's relationship to IEE 802.5, the IBM Cabling System and IBM hosts, and the status of Token-Ring compatible systems from third-party vendors.

Where	**When**
Melbourne Hilton	July 1-2
Sydney Hilton	July 6-7
Auckland Regent	July 9-10
Perth Hilton	July 15-16

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Overseas Outlook

MOUNTAIN VIEW, California — 3Com Corp was stood up at the altar when Centram Systems West rejected a buy out offer and instead agreed to be acquired by Sun Microsystems Inc. A month earlier Centram had signed a letter of intent to be acquired by 3Com for an undisclosed sum. It was swayed to Sun by an offer of 685,000 shares of Sun's common stock worth about $US20 million. It was the fourth rejection for 3Com . which had tried to buy or merge with Bridge Communications, Sytek, and Convergent Technologies. It had wanted Centram for its Tops distributed server architecture for the Appletalk Lan to round out its low end product line.

LONDON — In a move to penetrate the electronic data interchange market in the UK, General Electric Information Services Co (Geisco) has formed a joint venture with ICI and the EDI network company. The company formed by the venture, International Network Services Ltd, will concentrate on national and international trade, retail, insurance, travel and leisure, health and government markets.

PALO ALTO, California — Novell has reached agreement to buy CXI Inc, a supplier of micro-to-mainframe links for IBM and compatible personal computers. The buy is Novell's latest move in its attempt to become a complete communications vendor. In November the company acquired Santa Clara Systems. Pending approval of both companies' boards and shareholders — expected early this month — CXI will become an independent subsidiary of Novell and will continue to service its own customers. CXI will transfer all of its stock to Novell in exchange for 950,000 Novell shares, which sell for about $US35.

SAN JOSE, California — Convergent Technologies has restructured its long-standing OEM agreement with Unisys (the company formed by the merger of Burroughs and Sperry) and has also agreed to sell products of new partner Banyan Systems. Convergent had had a six-year association with Burroughs. The new three-year deal requires Unisys to buy a specified number of Convergent products in order to gain the right to manufacture those same products. It is intended to stabilise the relationship between the two, which became strained in the last three years as Convergent was unable to manufacture enough NGen workstations for Burroughs' use as its B25. In 1983 Burroughs began to make the machines itself and orders for Convergent's machines fell away.

Separately, Convergent signed an agreement to buy and resell Banyan's Virtual Networking Software (Vines) which will be used to interconnect Convergent's Clusternet Lans and work group servers.

ARMONK, New York — IBM has signed a series of multi-billion dollar contracts with Western Digital Corp. The deals will allow IBM to use Western Digital's storage control and communications products on its own products throughout the world.

Wran floats Micronode

By Luis Huesch

CANBERRA — Newly appointed Csiro chief Neville Wran, vowing to be "an interfering chairman", put business first on the agenda when he announced a joint venture aimed at capturing a $A100 million slice of the international computer communications market.

Speaking at the organisation's Canberra headquarters in his first official function as part-time chairman of the board, Wran said Csironet's joint venture with Techway Pty Ltd proved the increasing commercial orientation of Csiro's autonomous computing agency (Feb issue, p16).

Techway managing director Dr Peter Jones in turn described the venture's first product, the Ultranode, as "the equivalent of the winged keel" in communications. "We are going to take the world by storm and we going to build a billion-dollar company with it by the year 2000," he claimed. This presupposes a 35 per cent annual growth rate, but Dr Jones was optimistic about his company, which he characterised as "technically aggressive and financially conservative".

The joint venture, called Network Automation Pty Ltd, was formed specifically to market internationally the packet-switching network node developed by Csironet with Canberra company office Automation, since absorbed by Techway.

The device, some 200 of which are used within Csironet under its original name Micronode, is based on the Motorola 68000 processor family. It can be configured either as a packet-switching exchange or as a network-to-terminals interface. Up to 31 serial ports can be software-configured to permit connection to a variety of asynchronous and IBM 3270 BSC terminals, plotters, printers and other peripherals. The Csironet-developed node software is written in Pascal and compatible across a range of machine types.

No details were given by either side about the financial parts of the 60/40 split. Both parties made only general references to Csironet's software expertise and the fact that it had won the prestige order for the SA Justic Information System, as well as the "marketing and commercial expertise" of Techway and its 17-odd associated companies.

Wran said with the venture both Csiro and Csironet were "entering the real world of industry and — I almost slipped and said politics — commerce".

'We are going to build a billion-dollar company with it by the year 2000'

In answer to questions Wran:

- ■ Denied being a figurehead but said he would take on an active role and be an interfering chairman.
- ■ Declared he was starting out with a very healthy attitude toward Csiro: there had been a shift in economic outlook for Australia and there ought to be a shift in Csiro now toward a "better interface with manufacturing industry".
- ■ Promised there would be "no diminution of basic research"; instead, the organisation would apply research to finding solutions; it would set "specific aims and goals".

Acting Csiro chief executive Dr Keith Boardman earlier said the fact that Csironet had won multimillion dollar orders "against stiff competition from the private sector" showed it was "certainly fulfilling its charter to become more commercial".

Boardman said Australia was a "world-beater in computer communications" largely because the pioneering work done by Csironet researchers. This development had now reached a marketable state, hence the joint venture. Boardman stressed that Csiro "is committed both to excellence in research and also the transfer of that research the technology to Australian industry".

Neville Wran . . . research pledge

Techway general manager Jess Barber described the Ultranode as well-positioned vis-a-vis foreign offerings, and said overseas markets made up 95 per cent of its potential. Barber said the company now had six field officers in the US. Europe is next in the company's sights, being "ahead in networking and packet-switching — it's a great market", followed by Asia.

He expected export contracts to materialise "early in the new financial year" and hoped the company, through its Hong Kong affiliate, would be able to enter the Chinese market "within a year".

Buckle's 'secret' role

Richard Buckle . . . hasty US trip

SYDNEY — Richard Buckle, managing director of Systems Technology, made a hasty trip to the US last month, vacating his MD's chair and leaving the company without a permanent leader.

Buckle's unannounced departure appears to have been made to enable him to take up a special project with Systech's US parent company, Netlink Inc.

From Netlink's snowbound headquarters in North Carolina, Buckle said he was unable to announce details of the project. He said his new role would be explained when he visited Sydney in March with Paul Wood, the Australian founder of both Systech and Netlink.

Buckle said the position of managing director of Systech probably would remain vacant for some time, and that the company would remain under the temporary control of Steve McRae, an expatriate Australian who is Netlink's vice-president in charge of international operations.

Boeing and GM win COS-Map/Top panel.

By Bob Wallace

McLEAN, VIRGINIA — The Corporation for Open Systems (COS) and the Map/Top Users Group have formed a six-member advisory panel created to quell complaints by major companies that users are not adequately represented within COS.

The COS-Map/Top Advisory Council was hurriedly called together after General Motors and Boeing Computing Services — respective champions of the Manufacturing Automation Protocol and Technical and Office Protocol — threatened to withdraw from COS. The two companies reportedly complained that COS was vendor-driven and lacked sufficient user representation.

COS appointed Tom Chun, vice-president of corporate projects for Tandem Computers. Chairman at COS, tto the council, as well as COS steering committee chairman Don Tocher, communications director for Data General.

Map/Top steering committee chairman Charles Gardner and two other committee members, one chosen by COS, will represent the user group on the council. The user group also will be allowed to appoint a member of the COS executive committee to the council.

Gardner expressed optimism that the council will mollify Map/Top users who have criticised the value of representation in COS. COS has 61 member organisations. It describes itself as an international research and development consortium of vendors and users of computer and communications products and services.

The fledgling COS-Map/Top Advisory Council met for the first last month in Palo Alto to define its purpose, structure, membership and goals. In a related development COS announced that the user group accepted COS's invitation to become its first associate alliance member. COS is being granted similar membership status in the user group.

Losses may force Wang to restructure Intecom

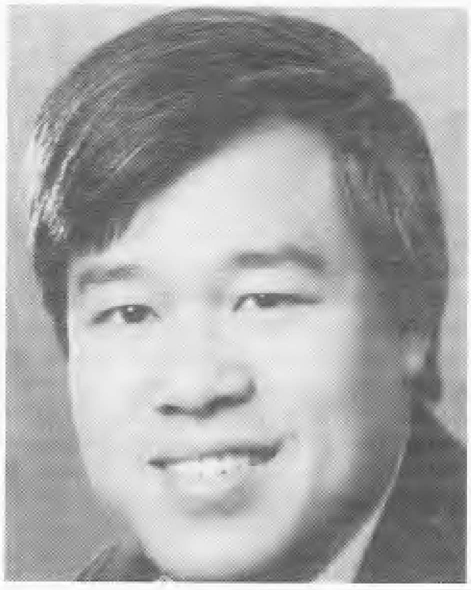
By Jim Brown

LOWELL, Mass — Strained by mounting losses, Wang Laboratories may merge the manufacturing facilities of the subsidiary Intecom with its own and deploy Intecom sales staff in Wang district offices, company president Frederick Wang said last month.

Frederick Wang, recently named president and treasurer of the company founded by his father, An Wang, spoke of the company's plans for private branch exchange maker, Intecom, after the introduction of Wang's VS 7000 series of minicomputers.

At the product unveiling, the company also hinted at the release later this year of a resource sharing facility capable of connecting up to four VS systems in a cluster.

The resource sharing facility reportedly is a standalone cabinet with processor boards and software designed to connect users attached to one VS system to data or programs residing on any of three other systems.



Frederick Wang . . . no staff cuts.

The product is being used in a US Air Force installation, and Wang engineers are readying a commerical version for introduction this year.

During the interview, Wang spoke of plans to move at least past of Intecom's Texas-based manufacturing operations to Lowell, Mass. He also said that Intecom and Wang sales staffs will be housed in one office in markets where each company has a separate office now.

Wang also said product development efforts will be stepped up in an attempt to improve Intecom's presence in the under-800-line PABX market. Intecom's research and development staff will remain in Texas, Wang said.

Wang said there are no plans to reduce Intecom's direct sales force. "A computer salesman does not have the expertise to sell a switch, just as a switch salesman does not have the needed expertise to sell a computer," Wang said. However, joint sales efforts will be stepped up, he said.

Wang said plans to expand Intecom's dealer network are being discussed. Intecom equipment is distributed in the US through a small direct sales force as well as through Nynec, Bell Atlantic, Bellsouth, US West, and Southwestern Bell — five of the seven regional Bell holding companies.

EDS subsidiary gears up for start

By Bob Wallace

PLANO, Texas — EDS Communications Co, the new communications management subsidiary of Electronic Data Systems (EDS), is staffing in preparation for its formal start.

In January, EDS Communications named former EDS vice-president, Don Drobny, as president and chief executive officer, replacing Gary Fernandes. The spin-off company has brought 600 staff members on board, most of them syphoned from EDS's Communications Services Division (CSD).

A high-ranking source in EDS recently said that 12 to 15 large users have already approached the company to explore the possibility of EDS Communications taking over management of their nets.

A similarly high-placed source with Northern Telecom confirmed earlier reports that the switch maker is discussing an OEM arrangement with EDS Communications that could provide EDS with large discounts for volume purchases of Northern Telecom equipment.

The EDS source also said EDS had concluded a long-term evaluation of long-haul carriers' fibre-optic facilities for use in its national private network. The source said the field of prospective suppliers of bulk fibre-optic bandwidth has been narrowed to AT&T and US Sprint Communications. EDS and AT&T officials reportedly met in California, to discuss the issue.

EDS Communications formed last July, intends to offer a full communications management service that will include network, equipment evaluation, acquisition and installation, provision of long-distance service and network operations and monitoring.

Staff of EDS communications will remain on user sites to operate and monitor the networks, said Dan McFarland, a former telecommunications manager with EDS who is a principal engineer with R.W. Becker and Associates.

EDS clients' domestic voice and the data traffic will be carried over EDS's network, while international traffic will passed through the EDS Net International Regional Node, an extension of EDS Net.

The first such node will be deployed in Japan, the second in Singapore. Others will be in the UK, Europe and Australia. The nodes will be hooked to companion switchig centres in the US using T-1 lines, EDS said.

EDS Communications probably will offer to replace users' existing equipment and long-distance services with others owned or bought by EDS for the same or a lower price.

Front-end forecast

Segment	1985	1986	1987	1988	1989	1990
High-end units Dollar value	6,490 $681.5m	7,269 $763.3m	8,069 $847.2m	8,876 $931.9m	9,674 $1,015.8m	10,448 $1,097.1m
Low-end units Dollar value	270 $10.8m	500 $20.0m	750 $30.0m	900 $36.0m	990 $39.6m	1,089 $43.6m
Subtotal units Dollar value	6,670 $692.3m	7,769 $783.3m	8,819 $877.2m	9,776 $967.9m	10,664 $1,055.4m	11,537 $1,140.7m
High-end units Dollar value	2,020 $202.0m	2,101 $210.1m	2,185 $218.5m	2,272 $227.2m	2,363 $236.3m	2,458 $245.8m
Low-end units Dollar value	110 $3.8m	190 $6.6m	270 $9.5m	335 $11.7m	375 $13.1m	405 $14.2m
Subtotal units Dollar value	2,130 $205.8m	2,291 $216.7m	2,455 $228.0m	2,607 $238.9m	2,738 $249.4m	2,863 $260.0m
	8,890 $898.1m	10,060 $1,000.0m	11,274 $1,105.2m	12,383 $1,206.8m	13,402 $1,304.8m	14,400 $1,400.7m

NOTE: Average dollar value per unit was held constant throughout forecast. Figures are for U.S.-based manufacturers.

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

Europe seeks standard card

BRUSSELS — The European Community (EC) has called for cross-border compatibility in bank-card technology. In a proposal submitted to national governments, the Brussels-based EC commission recommended that all major credit cards be usable in point-of-sale (POS) terminals and cash dispensers in any of the 12-member countries by the end of 1992.

To achieve this, the commission wants the European information technology industry and financial institutions to promote consistency in the application of existing standards for magnetic stripe cards; to agree on procedures for hybrid cards that include magnetic stripe and microchip; and to prepare for access to cash dispensers for all types of cards.

Industry Insight

☐ SIEMENS, which in November predicted a flat operating profit of about DM1500 million ($US828 million) for its 1986 financial year, caused a selling panic on West German stockmarkets when it announced a decline in earnings on reduced sales. In a preliminary statement Siemens announced that profits had fallen 3.5 per cent to DM1470 million ($US813 million) on sales that had dipped 14 per cent to DM47, 100 million ($US2600 million). The announcement started a panic that trimmed more than five points from the Commerzbank index and slashed DM19 ($US11) off the price of Siemens shares, which finished at DM677 ($US374).

☐ UNGERMANN-BASS recorded revenue of $US32.3 million for its fourth quarter to December 31, compared with revenue of $US22.5 million for the same quarter of the previous year. Profits were $US2 million, compared with $US1.6 million for the previous year. In 1986 the company posted revenue of $US110.9 million, compared with $US72.2 million in 1985. The company recorded a break-even result, compared with a profit of $US3.7 million in 1985.

☐ WESTERN DIGITAL has reported a profit of $US11.8 million for the second quarter of its financial year. The result was a 134 per cent improvement on its $US5 million profit a year earlier. It was recorded on revenue of $US109.8 million, which was 57 per cent up on the same quarter of the previous year.

☐ DIGITAL COMMUNICATIONS Associates has announced that revenue for its second quarter, to December 31, was $US46.1 million. This compares with $US38.9 million a year earlier. Profits rose 124 per cent, from $US3.9 million to $US8.7 million.

☐ MICOM SYSTEMS has reported third-quarter revenue of $US50.5 million, a rise of 3 per cent over the $US49.1 million the previous year. Profit was down $US3.5 million from the $US4.2 million registered the previous year. The company attributed the decrease in profit to weak sales in Ethernet local area networks and data private branch exchanges.

☐ BRIDGE COMMUNICATIONS has reported a 50 per cent increase in revenue and a 51 per cent boost in profit for the fourth quarter of its financial year. In the record quarter the company posted a profit of $US1.54 million on revenue of $US14.56 million.

☐ NORTHERN TELECOM, boosted by a strong fourth quarter, finished its financial year with nominal increases in sales and earnings. In the fourth quarter higher sales and margins on central office switches fuelled a 50 per cent rise in profit to $US125.9 million on revenue that climbed 11 per cent to $US1,310 million. For the year profits rose 5 per cent to $US286.6 million on sales that increased 3 per cent to $US4,380 million.

HP, IBM online with new package

BLACKBURN, Vic — A family of software and hardware products announced by Hewlett-Packard Australia Ltd is claimed to allow the HP 9000 Series 300 engineering workstations and Series 800 minicomputers to communicate with IBM mainframe computers.

A spokesman said the products permit users to access mainframe databases, peripheral hardware and electronic-mail systems by way of IBM SNA networks.

There are two new products, each available in three variations: the HP-UX SNA Link for the HP 9000, a communications multiplexer that emulates an IBM 3274 cluster controller; and the HP-UX SNA 3270 software interface that emulates an IBM 3278 display station or an IBM 3287 printer.

Using these, HP 9000 computers with HP-UX can emulate IBM display stations, achieving fully interactive-access and file-transfer capability, the spokesman said. Connections can be made with a single unit or with a local-area network (Lan) with up to 32 active sessions under way simultaneously.

HP's architecture distributes the communications workload across a Lan, eliminating the need for a separate, dedicated processor, the spokesman added.

The SNA Link can support up to 32 sessions on HP workstations and terminals to an SNA network. By way of a synchronous RS-232-C interface, it connects to an IBM communications controller through modems and a telephone line.

An entry-level SNA Link is also available. It supports a single workstation with two simultaneous sessions, while a single-system version of the SNA Link supports multiple users and 32 active sessions. In addition, the HP-UX Gateway/SNA Link for the HP 9000 serves multiple users on multiple systems on a standard IEEE 802.3 Lan and supports up to 50 active sessions.

The SNA 3270 emulator provides an interface between the SNA Link on one side, and one or more user stations on the other, the spokesman explained.

- ■ SNA Link 3270 runs on a HP 9000 Series 300 workstation under HP-UX. It works with both an entry-level and multi-user SNA Link, the spokesman said.
- ■ Gateway/SNA 3270 runs on an HP 9000 Series 300 workstation, which must either be equipped with a Gateway/SNA Link for the HP 9000, or be in a network with a Gateway-equipped Series 300.
- ■ Gateway/SNA 3270 runs on a HP 9000 Series 800 computer networked with a Gateway-equipped Series 300 workstation.

The products are designed so that communications chores are distributed among workstations on the network. This means the gateway-equipped computer does not have to be a dedicated gateway processor.

File transfer is fully transparent without the need for operator intervention because of HP's use of IBM's SNA block-mode transparent terminal emulation and the IEEE 802.3 network standard, the spokesman said. However, competing products using Arpa file transfers require operator intervention.

Hewlett-Packard Australia Ltd, 31-41 Joseph St, Blackburn, Vic 3130. Tel: (03) 895 2895.

Altos Enet Lan comes to Australia

ALTOS Computer Systems recently announced local availability of high-speed local area network hardware and software for its Intel and Motorola-based multi-user systems. Its processors can now talk to any other system conforming to the Ethernet IEEE 802.3 standard, the company said.

Altos Enet is said to provide a transparent link for services such as file copy, remote login, electronic mail and mainframe access. Connection to other Ethernet systems is via TCP/IP (Transport Control Protocol/Internet Protocol), a US Defence Department "standard" that is now gaining a wider commercial following.

The Enet hardware is a customised version of the Exos 201 board developed for Altos in the US. The board provides network address decoding, error detection and correction and runs a real-time network operating system for packet and message control. It also contains dedicated memory for packet assembly.

Altos general manager, David Malcolm, said Enet was "a key component of our strategy to provide comprehensive communications solutions for a wide variety of market requirements and represents our commitment to Ethernet."

Catel-Sam tie-up

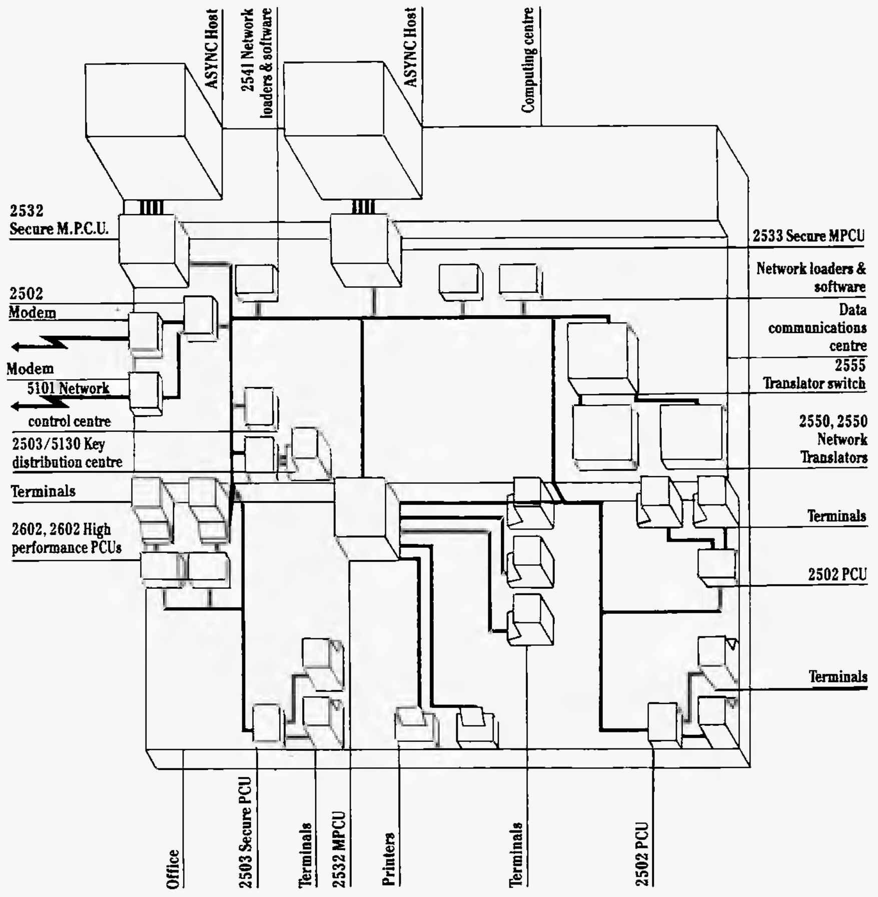
MARAYONG, NSW — Audio and data transmission equipment from Catel Telecommunications Inc of California has been released in Australia through Sam Technology.

A spokesman said Catel products were intended for use in CATV, CCTV, broadcast and local-area networks.

Sam Technology offers consultancy on the application of the Catel equipment, the spokesman added.

Sam Technology, 36 Binney Rd, Marayong, NSW 2148. Tel: (02) 671 5588. Telex: ESEM 127135.

Flexibility added to System 2000 networks



The Sytek System 2000 network.

NORTH SYDNEY — Sytek Australia Pty Ltd has unveiled several products which extend and help to manage System 2000 networks.

Among the capabilities these products are claimed to provide are special Manufacturing Automation Protocol (Map) channels within the System 2000 network, as well as local-area network (Lan) connectivity for any device, synchronous or asynchronous.

A spokesman explained the products are for the System 2000 asynchronous terminal-to-host Lan, and the complementary System 5000 network management product line. They include:

- ■ System 2000 Highband, a modem board option for existing products that makes the future inclusion of Map channels possible and doubles the existing channels to approximately 120.
- ■ 1301 and 1302 Protocol Transparent Units, which allow synchronous or asychronous devices not now supported by System 2000 to be connected together on a channel of a System 2000 network.
- ■ 2602 and 2622 Packet Communication Units (PCUs) that increase network throughput from 19.2 to 38.4K-bits/sec, a requirement for graphics and other high-speed applications.
- ■ 5202 Network Bridge/Link Unit, for connecting any System 2000 channel to another channel within the broadband network and to connect networks, whether local or remote.
- ■ 5102 Statistical Monitor, which enables network managers to collect network performance statistics.

The new highband option frees up two Map channels, which will become very important for office automation in manufacturing environments," said the spokesman.

Highband also gives System 2000 expansion capability by creating about 120 subchannels on one cable. It is a modem board hardware option that is available on the System 2000 PCU and MPCU, Network Translator, Translator Switch and bridging devices.

The Protocol Transparent Units (PTUs) create a dedicated channel for connecting any set of compatible synchronous or asynchronous devices together over the existing broadband cable of a System 2000 network. The PTUs are the first products in Sytek's new System 1000 family, the spokesman noted.

Sytek PTUs are used in terminal-to-host applications. The 1301 PTU is a medium-speed device for connecting compatible terminals to mainframes. It operates at 38.4K-bits/sec and connects equipment via a standard RS-232 port.

A second PTU, the 1302, is used for higher speed applications, operating at 64K-bits/sec and using an RS-422 interface, the spokesman said.

Sytek's 2602 and 2622 PCUs let users execute high-speed applications without installing a separate, point-to-point network. Applications demanding data rates of more than 19.2K-bits/sec are supported by System 2000 networks. The 2602 is a standalone, single-port device, while the 2622 is a board that fits into a modular, rack-mounted MPCU.

Sytek's 5102 Statistical Monitor extends network management functions of System 2000 by extracting information and creating special reports. This passive device is useful in analysing channel utilisation, checking the network's physical condition and planning future capacity.

Sytek Australia Pty Ltd, 77 Pacific Highway, N Sydney 2060. Tel: (02) 957 2655. Fax: (02) 923 2570.

Lasernet links processors and printers.

FRENCHS FOREST, NSW — Case Communications has introduced the first of a range of networking products which enable a number of PCs, terminals, word processors or mainframes to share laser and other printers.

Designed to make efficient use of expensive printers, Lasernet is connected between the printing device and the printer, modem or auxiliary port of the sending units, a spokesman explained. The standard Lasernet configuration allows up to eight devices to share one or two printers. When connected to two printers, Lasernet allows printer selection to be preset for each computer device, or under user control.

Buffering within Lasernet enables data to be dumped to the unit from the PC at high speed, enabling the PC to carry on with other tasks while Lasernet controls the printing, the spokesman said. Lasernet contains a 256K-byte buffer which allows about 128 pages to be stored. It can output to two printer interfaces simultaneously.

The list price for Lasernet is $A1995.

Case Communications Systems Ltd, 10 Rodborough Rd, Frenchs Forest, NSW 2086. Tel: (02) 451 6655.

Aspen linked to Ericsson PABX

MELBOURNE — The Aspen (automatic speech exchange network) voice messaging system from Octel Communications Corporation has been integrated with the LM Ericsson MD110 digital PABX.

A spokesman for the Australian distributor of Aspen, AAP Reuters Communications, said Aspen integration with the MD110 would enable users to have their phones answered by Aspen when they were absent or when they chose to work undisturbed.

The AAP Reuters spokesman added: "The co-operation of LM Ericsson ensured early success."

AAP Reuters Communications Pty Ltd, 30 Ross St, Glebe, NSW 2037. Tel: (02) 692 1000.

Matrix switch circuits behave like a cable

CROYDON, Vic — Datatran has released the 9000 series of matrix switches, which it has designed and built in Australia.

A spokesman said the 9000 series uses no microprocessors or Bus system, unlike most matrix switches. Instead, each circuit has its own path through the switch, just like a cable or hardware connect, the spokesman explained.

Each input is said to be able to support up to 20M-bits/sec. The spokesman said the company had to build 18-layer circuit boards in order to construct the switch to the required performance levels.

The main switch unit, which houses the matrix switching equipment and interface circuitry for software control of the switch, is supplied with redundant power supplies and battery backup of system configuration.

The switch's architecture allows interface units to be located remotely from the main switch unit via a condensed cabling system. This puts the interface unit close to controllers or central to terminal devices at distances up to 30 metres from the main switch unit, the spokesman said. Cabling from the attached devices is connected to connector panels at the bottom of each interface unit.

Interface cards and connector pans are available for RS232, V.35, X.21, X.25, 3270 coax and other high speed interfaces, the spokesman said. Multiplexers, demultiplexers, line drivers and other devices can also be accommodated in the interface units to reduce cabling bulk.

The switch's network control system resides on an IBM/XT or AT personal computer or compatible machine connected by a high-speed data path to the main switch unit. Multitasking and network software allows multiple ATs or XTs to be linked locally or remotely via modem links.

For IBM SNA networks an LU6.2 interface is available so that the host is able to control resources outside the SNA environment, the spokesman claimed.

Cost of the switch is about $A800 to $A1000 a port, depending on the size and configuration of the system.

Datatran Systems Pty Ltd, 2-4 Jesmond Rd, Croydon, Vic 3136. Tel: (03) 725 6677. Fax: (03) 725 0774.

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Multifunction file server uses Vines

FIVE DOCK, NSW — Tallgrass Technologies Australia has launched the Lancourier multifunction file server that supports a variety of local area network configurations and communications options, using Vines virtual networking software.

A virtual network server, the Tallgrass Lancourier (Model TG-8000) is a 32-bit network file server which provides resource sharing for small computer networks, wide-area networking, host access and server-to-server communications.

The Vines virtual networking software is also available in a software only version, with the capability to run on any 80286-based personal computer, a spokesman claimed.

Fast access

A fully integrated file and communications server giving personal computers access to all an organisation's resources, Lancourier uses Unix System V with the 68000 processor to perform file server, print sharing and communications functions, while supporting Dos applications running on the network.

With up to 5M-bytes of Ram and 240M-bytes of built-in hard disk storage, and further expansion through an external SCSI Port, Lancourier provides fast access.

The Lancourier file server provides fully integrated communications and multi Lan-links.

Pricing for the Lancourier virtual network server begins at $A19,550 (including tax) for a base configuration including 1M-byte of Ram, 50M-byte hard disk, and a 60M-byte tape backup; and $A3990 (including tax) for the network software.

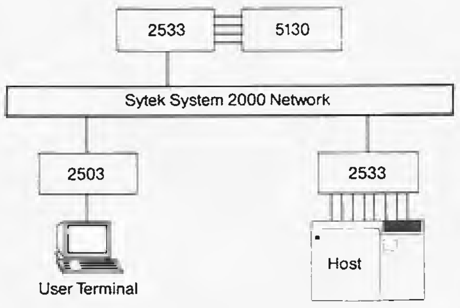
Tallgrass Technologies Australia Pty Ltd, 34 East St, Five Dock, NSW, 2046. Tel: (02) 712 2010.

Cryptosystem integrated in Sytek Lan

NORTH SYDNEY — Sytek Australia Pty Ltd has introduced a data encryption local area network (Lan) system, called Secure 2000, which integrates a cryptosystem into the company's System 2000 terminal-to-host Lan. The System 2000 already offers user authentication through its password feature and access control via the network control centre (NCC), a spokesman said.

The Secure 2000 system consists of: The 2503 Secure packet communication unit (PCU), a two-port device that performs data encryption: the 2533 Secure Modular PCU (MPCU), an eight to 32-port rack-mounted secure data communications device that is used for the host and multiple Lan attachments linked within a wiring closet; and the 5130 key distribution centre (KDC), which generates logs and distributes unique data encryption keys for each session.

Sytek Secure 2000—System Diagram



The Secure PCU and Secure MPCU have all the operational capabilities of standard PCUs and MPCUs on a System 2000 network, including the password protection feature for user authentication, the spokesman said. Users can choose between an encrypted or regular (unencrypted) session. As an additional feature, Secure 2000 guards software by not allowing broadcast download.

A Secure PCU or Secure MPCU port is required for each device on the network. The user inputs a password to access the PCU and the local directory name for the person receiving the data.

Transparent to the user, the KDC records and distributes a key to the sending and receiving devices. Thereafter, all data in that session is encrypted. Operation is claimed to cause no degradation in Lan performance because of a "stream cipher encryption mode," which allows most of the encryption to be done during terminal idle periods.

The KDC consists of three boards and associated software that use a dedicated IBM PC/AT or compatible with a 20M-byte hard disk and 512K-bytes of Ram under Dos version 3.1.

An additional layer of security can be added by installing an optional Sytek 5101 NCC within a Lan.

Sytek Australia Pty Ltd, 77 Pacific Hway, N Sydney 2060. Tel: (02) 957 2655. Fax: (02) 923 2570.

'Missing link' supplied

Enhanced Net/Master manages both operating system and net

CHATSWOOD, NSW — Significant enhancements have been made to the Net/Master network management system for IBM mainframe environments by the product's Australian developer.

Software Developments has added VM group control system support, an electronic mail system, and the advanced operation management feature, (AOM). A spokesman said the most significant announcement was the advanced operation management system, which is an optional feature.

"AOM addresses the missing link in management of an entire organisation," the spokesman said. "It manages the operating system as well as the network in single and in remote locations." Features of AOM include selective monitoring of operating system message traffic, isolation and categorisation of message traffic, message delivery to multiple receivers, remote system monitoring, and 24-hour operation through dynamic online system alteration.

AOM interfaces to MVS using the subsystem interface (SSI) and can therefore screen and if necessary process all system messages, commands and responses, the spokesman explained.

Messages can be selectively eliminated or routed to Net/Master for further processing by a specialised network control language procedure and delivered to nominated operator control services screens. Logging to Net/Master's activity log can also be performed. "These facilities make the analysis of any form of message traffic possible," the spokesman claimed.

At present AOM operates with IBM's MVS/XA, MVS/SP and Fujitsu's MSP environments.

The Net/Mail electronic mail system is designed to operate within the user services component of Net/Master or under the control of Easinet, the spokesman explained. It is designed to operate with 3270 type terminals or with PCs operating in 3270 mode.

Net/Mail takes an unusual step in mailbox control by placing responsibility for entry and maintenance of details in the hands of the user. The first attempt to use Net/Mail causes the system to solicit information about the intending user, such as name, title, location, preferred network printers to receive mail and notification methods. As the details change they can be altered online, the spokesman said.

A bulletin board is provided, as is a telephone message facility. Net/Mail has a once-only charge of $A5000 for the first processor and $A1500 for each other processor. An upgrade charge of $A2500 and $A1000 respectively applies to future versions.

Software Developments has also included support for VM through the group control system which, while not eliminating the need for Vtam in a guest system, does make it possible to incorporate CMS devices within the network directly.

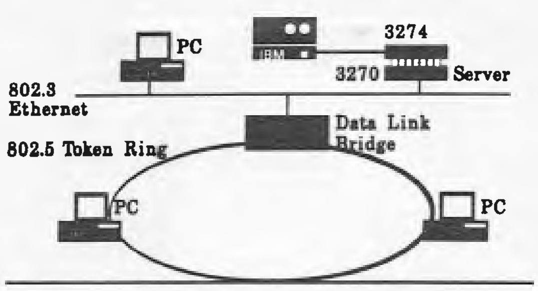
The spokesman said that Net/Master for operation with VM/GCS provides identical external interfaces and provides full function network management for the VM system.

"The multiple application interface can be used to access not only CMS applications, but also cross-domain applications running in other virtual machines or remote processors," the spokesman noted.

Software Developments Pty Ltd, 845 Pacific Hwy, Chatswood, NSW 2067. Tel: (02) 411 7200. Fax: (02) 411 6764.

Fast bridges tie token-ring to Ethernet

Local Ethernet - Token Ring

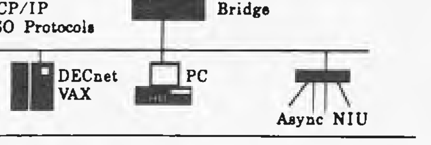


ORMOND, Vic — High-speed network bridges capable of linking local or remote IBM-compatible token-ring local area networks (Lans) to an Ethernet network have been developed by Ungermann-Bass and released in Australia by Data Bridge Electronic Communications Pty Ltd.

Available in both local and remote models, the Net/One data link bridges are said to provide protocol-independent routing of data packets between multiple types of Lans.

Because they do not rely on any specific protocol suite, the bridges allow multiple communications protocols, such as Xerox network systems (XNS) transmission control protocol/internet protocol, ISO and Digital Equipment Corp's Decnet, to operate over the bridge, a Data Bridge spokesman has claimed.

Local Ethernet - Ethernet Bridge



"The local and remote token ring-Ethernet data link bridges allow customers with XNS networks, for example, to further extend their Lans by adding token-ring systems. In a campus environment several IBM-compatible token ring networks can be connected via a high-speed broadband backbone," the spokesman said.

"The Ethernet-Ethernet bridges are also available and offer the advantage of allowing multiple vendors' equipment running different upper-layer protocols to be linked together over a single internet device."

To eliminate unnecessary traffic across the internet and prevent congestion, the data-link bridge can selectively forward packets from each network. Only data addressed from one network to another passes through the bridge. Because the data-link bridge does not need to analyse upper layer protocols, it is reportedly able to forward packets at a much faster rate than PC-based bridges, which establish sessions at the Netbios level.

The company claims the Ethernet-Ethernet data link bridge can forward up to 6000 packets/sec, matching the throughput of the Ethernet Lan itself and the remote Ethernet-Ethernet model can forward at a rate of up to 2500 packets/sec.

Management messaging

All remote Net/One data link bridges operate from 4.8K-bits/sec to 2.048M-bits/sec.

The data-link bridge is also capable of forwarding network management messages thus enabling a single server to manage the entire net/one internet. "By eliminating the need for a network console at each network, network management is simplified," the spokesman said.

Data Bridge Electronic Communications Pty Ltd, 604 North Rd, Osmond, Vic 3204. Tel: (03) 578 0814.

Rbase 5000 redesigned for N-Gen

CASTLECRAG, NSW — A version of the RBase 5000 database management system for the Ctos/Btos operating environments of Convergent Technologies N-Gen workstations, has been released by The SNS Group.

An SNS spokesman said the RBase 5000 relational database package has been completely redesigned for the N-Gen multi-user environment, but still contains the features of the MS-Dos version and is used in the same way. Extra features include a data locking feature, password security on all files, the Applications Express application generator, macro files and a compile facility.

Through the use of PCtos-Net, which enables IBM PCs and compatible machines to emulate the N-Gen workstations, RBase 5000 macro and data files can be transferred from N-Gen to PC and vice-versa. This allows the same database applications to run on both types of equipment using the same commands, a spokesman claimed.

Ctos/Btos RBase 5000 costs about $A2465 plus tax, while upgrades from RBase 4000 and RBase 6000 cost about $A995 plus tax.

The SNS Group, 2-3 The Postern, Castlecrag, NSW 2068. Tel: (02) 958 2399.

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